

AMERICAN ARTISAN

DECEMBER 1958

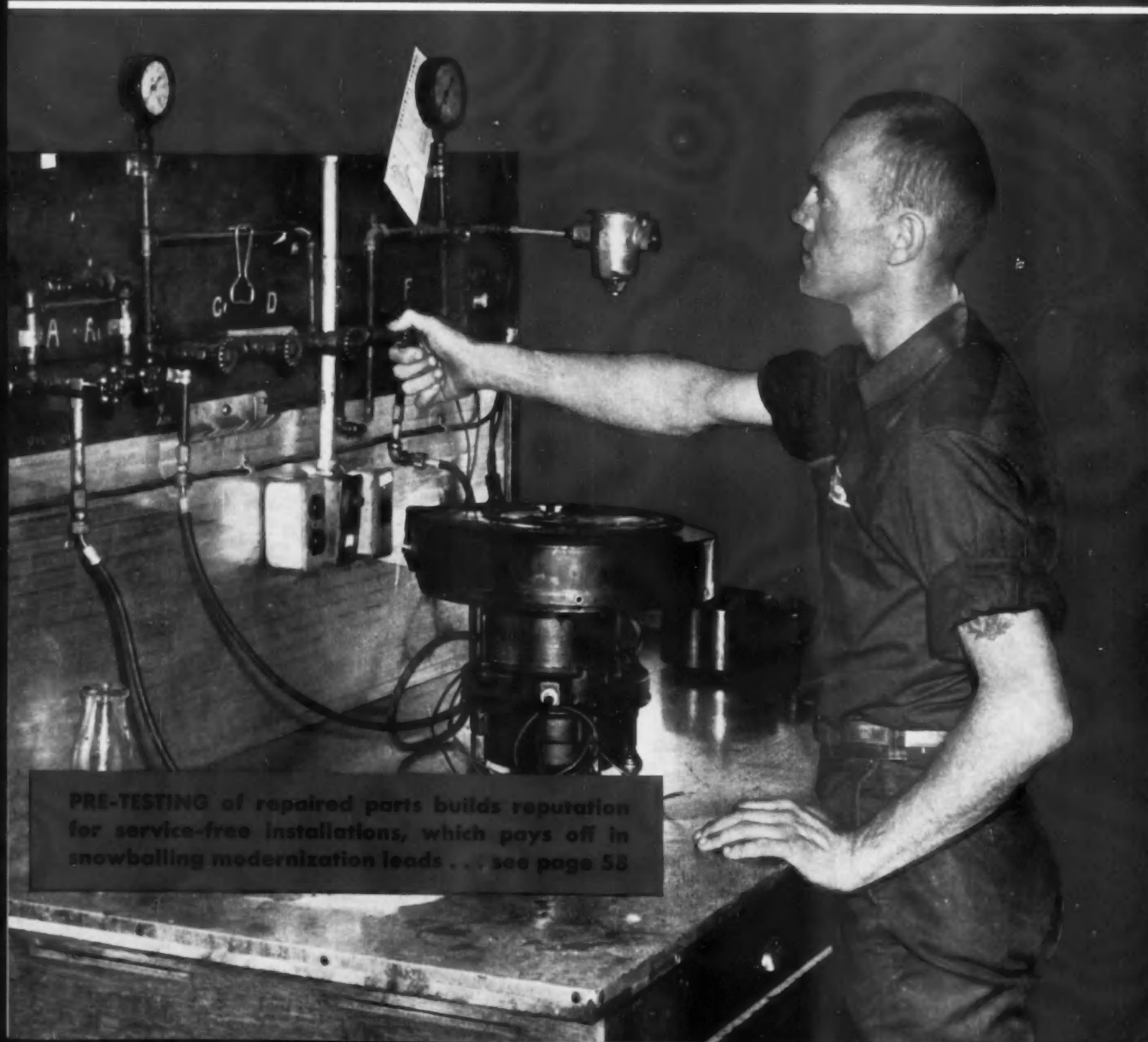
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Contents Page 4

.. The Magazine of

CENTRAL RESIDENTIAL AIR CONDITIONING

WARM AIR HEATING • SHEET METAL CONTRACTING



PRE-TESTING of repaired parts builds reputation for service-free installations, which pays off in snowballing modernization leads . . . see page 58

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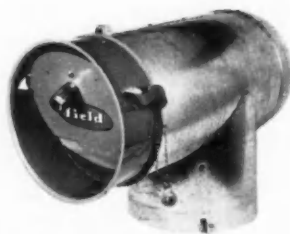


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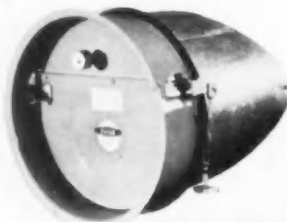
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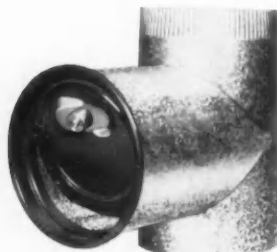
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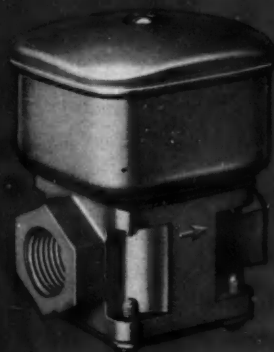


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AMERICAN ARTISAN

... The Magazine of

CENTRAL RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

DECEMBER 1958

FEATURES

New Building Attracts Comfort-Minded Prospects	34
Makeup Air Load Affects Furnace Selection	36
Two Extended Plenums, Outside Control Produce Even Temperatures	40
Sheet Metal Pioneers in Development of "Automated" Foundry ..	44
Use Simplified Method to Develop Tool Box Pattern	48
Cash Discount Savings Represent Clear Profit	50
How to Design Independent Cooling for Wet Heat House	52
Air Conditioning Market Study Suggests Sales Approaches	56
Twice-a-Season Service Contract Produces Sales Leads	58
Good Will Letter Builds Prospect List	64
Federal Laws Permit "Good Faith" Price Cutting	66

DEPARTMENTS

The Editor's Notebook	6
What's Happening — Including Washington Letter	21
Editorial: 'Do It Yourself' For Home Owners	33
Hugh Reid's Pattern Problem	48
Idea Exchange for Dealers and Contractors	64
You and the Law	66
What the Associations Are Doing	70
Coming Events	72
Equipment Developments	76
New Literature	95
We Hear That	98
Wholesaler Doings	101
Appointments	102
Index to Advertisers	108

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See them on display in Booths 102-106-108-110

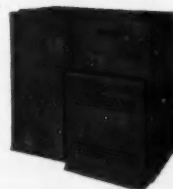
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Convention Hall — Philadelphia
January 26-29, 1959

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TYPE 219 LOWBOY

the editor's notebook

Thumbing Through This Month's Artisan

... we find the late Guy Voorhees' last contribution to the warm air heating industry, a timely and analytical article, *Size Furnace to Handle Makeup Air Load*. We consider the factors which create the need for introducing ventilation and combustion air into modern tightly-built houses, and we apply recommendations and facts gathered from far-flung sources and woven into a pattern for calculating intake duct sizes and capacities, additional heat loads and other factors which go into designing well-balanced winter air conditioning systems.

Progress

... we verify the importance of contractors' skills in all types of industries in an account of how *Sheet Metal Plays Pioneer Role in First Automatic Casting Line*. We tour a foundry which has discovered a method of continuous casting which represents a long step forward in its field. We see, in the volume of specially fabricated sheet metal hoods, housings, pans, hoppers, mullers, etc. along the casting line, that this new development owes its existence largely to the know-how of the sheet metal contractor.

Service

... and we make the rounds with a dealer-contractor whose *Double-Check Service Contract Piles Up Modernization Leads*. We look over a twice-a-season inspection and adjustment contract which calls for a cleaning, adjustment and trouble-shooting call just be-

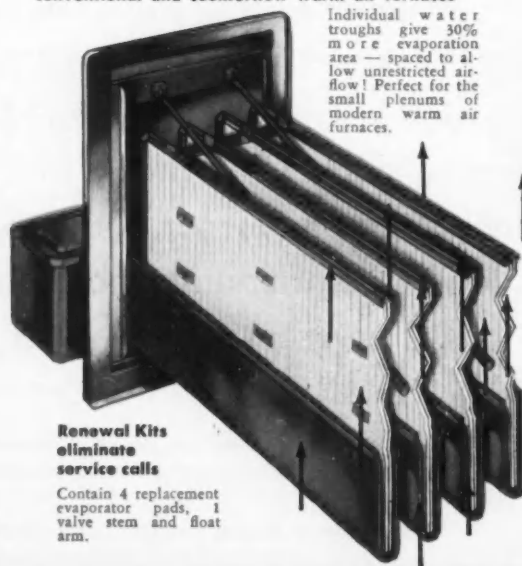
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the editor's notebook

(Continued)

fore the heating season and another in January or February. We find that this agreement produces modernization sales by building service customers' confidence in the company's ability to keep their systems operating efficiently, and giving company representatives more opportunities to plant modernization ideas in their service customers' minds. We observe the direct mail promotion of the contract, the inspection and service procedures and the follow-up techniques which add up to snowballing sales leads.

Design

... and we visit an old house with a hot water heating system with a dealer-contractor whose *Complete Survey Sets the Stage for Independent Cooling System* and points the way to economical and efficient summer comfort in a residence which was built before air distribution problems were being considered by builders. We follow the case history from the voluntary survey, in which the latent load, heat gain, power problems and structural details are analyzed, to the follow-up visit with the prospects in which the dealer-contractor's recommendations for summer air conditioning are offered and accepted.

Adequate Roof Drainage A Must — RDMI

RECENTLY I received a letter from the Roof Drainage Manufacturers Institute which pointed out that any practice which plans roof drainage at certain points in a house and neglects other areas does not accomplish the real purpose of providing adequate water drainage from the roof and away from the house. The RDMI recommends that all

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Charlotte	Denver	Kansas City, Mo.	New York	Providence	Waterbury
Chicago	Detroit	Los Angeles	(Mass., U.I.)	Rochester	

the editor's notebook

(Continued)

roofs, regardless of pitch and overhang, be provided with metal gutters and downspouts adequately designed to remove water from the roof quickly and efficiently. I believe that this is very pertinent information because in too many recent installations it has been found that the installer, in order to keep costs down, has used the minimum amount of roof drainage.

I agree with the RDMI that an inadequate job is almost as bad as no job at all because it gives a black eye to the industry.

Sees Continuing Rise In Operating Costs

IT SEEMS that overhead costs rise each year. The multitude of records that must be kept is one of the reasons for the increase in operating costs. Records are important in today's business world — they are required by law and they provide the dealer-contractor with clues to weak spots in his business functions.

There doesn't seem to be any likelihood that overhead costs are going to be decreased during the next seven to 10 years. An investigation by the First National Bank of Chicago indicates that by 1965 total employment in the United States will exceed 73 million persons, an increase of 17 percent in the 10 years from 1955. Professional and technical people are expected to show the sharpest increase — 43 percent — while the number of clerical workers should rise by 26 percent.

This rapid growth in the number of white collar workers continues a trend toward an increasing proportion of people working in clerical, professional, technical, managerial and sales positions.

About 40 percent of the labor force is presently so employed — nearly double

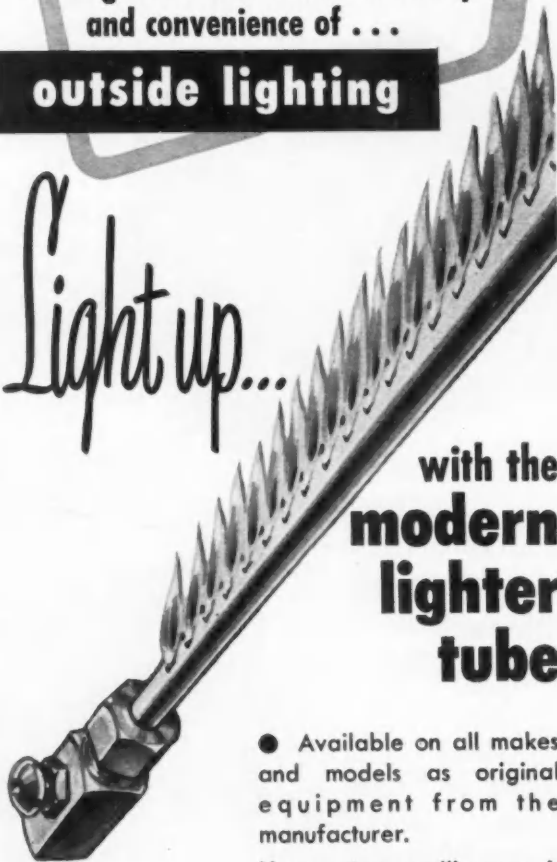
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MODERN LIGHTERS

INCORPORATED
NORTHVILLE, MICHIGAN
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the editor's notebook

(Continued)

the 22 percent in 1910 — and this proportion is expected to rise above 42 percent by 1965. Increased employment in these categories suggests greater stability of employment, incomes and consumption in the years ahead.

In 1956, the number of white collar workers for the first time exceeded those in crafts and production, which now supply slightly less than 40 percent of all jobs.

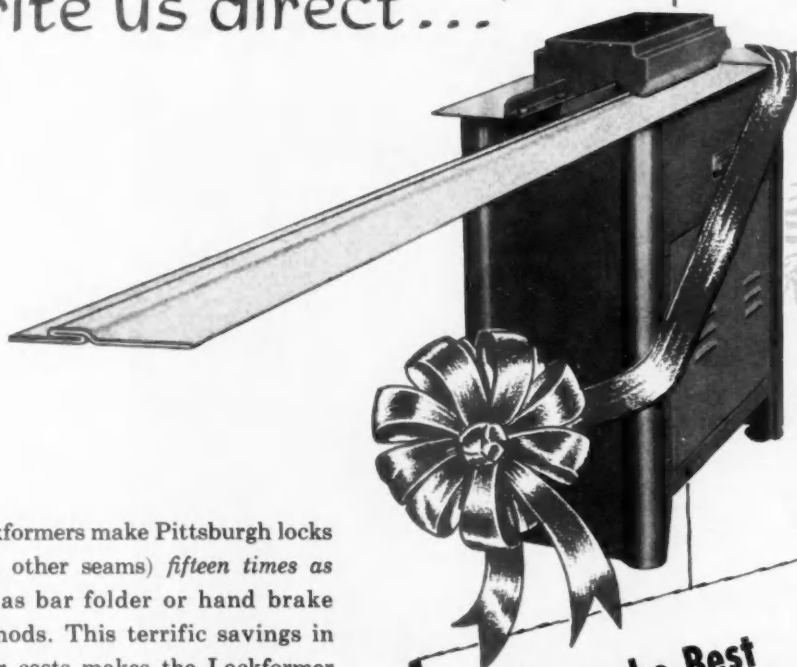
Although the total number of craftsmen and production workers is expected to rise by 1965, the amount of increase will be less than the average growth of the labor force. Reflecting the movement to automation, skilled workers and foremen may show the largest rise within this group — over 19 percent above 1955 — while the number of semi-skilled workers is expected to rise only 13 percent, and unskilled laborers to remain at present levels.

The number of people in service occupations is expected to rise by more than 22 percent. This will represent greater numbers of repairmen, and others who are not included in clerical, professional or other categories.

Predicts Growing Use Of Oil As Fuel

WHAT are the prospects for oil as a heating fuel 10 years from now? Most people in the industry have asked this question. I believe the remarks made by Len S. Marshman, manager, Fuel Oil Div., Socony Mobil Oil Co., Inc., to the Fuel Oil Committee of the American Petroleum Institute, answer this question to some extent. Mr. Marshman said, "America's need for energy for heat is going to continue to grow during the next 10 years by about 14 percent.

If Santa Claus
doesn't get the word,
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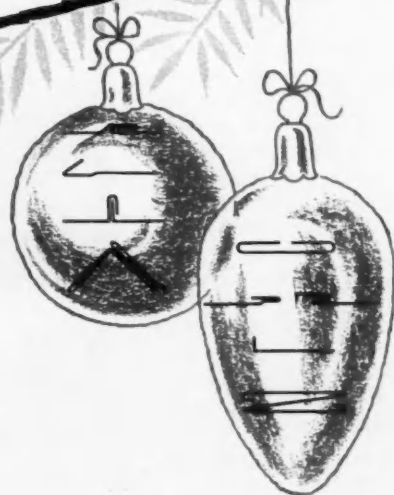
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the editor's notebook

(Continued)

This is a healthy rate — not too much below the growth rate between 1947 and 1957 of 15.3 percent.

"Distillate oil is also likely to be used increasingly as a heating fuel between now and 1967.

"Although demand for natural gas for heating shows signs of increasing at a faster rate than demand for oil, oil will remain the leading heating fuel in 1967 by a slim 1 percent margin."

What Is User Reaction To Service Contract?

THE VAST majority of residential fuel oil customers are completely satisfied with their oil heating plants and have a high regard for oil heat service contracts. They want to pay for their service contract as a separate item, however, in preference to having this cost included in the price of fuel oil. This is the composite view of respondents in a consumer attitude survey sponsored by the Oil Heat Institute of America, results of which have just been released.

Nine out of every 10 people interviewed did not think their service calls last year had been excessive. The average number of calls made was about two to two and one-half. It is interesting to note that nearly one-quarter of the fuel oil users who did not have service contracts thought they did.

Ninety-eight percent of those having service contracts were satisfied with the extent of the coverage afforded them by the contract which included service and parts. Nearly 80 percent of those with or about to purchase service contracts stated they would prefer having a contract that was all-inclusive: emergencies, parts, cleaning, adjusting and the tank.

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... not for 15 or 20 years, but

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the editor's notebook

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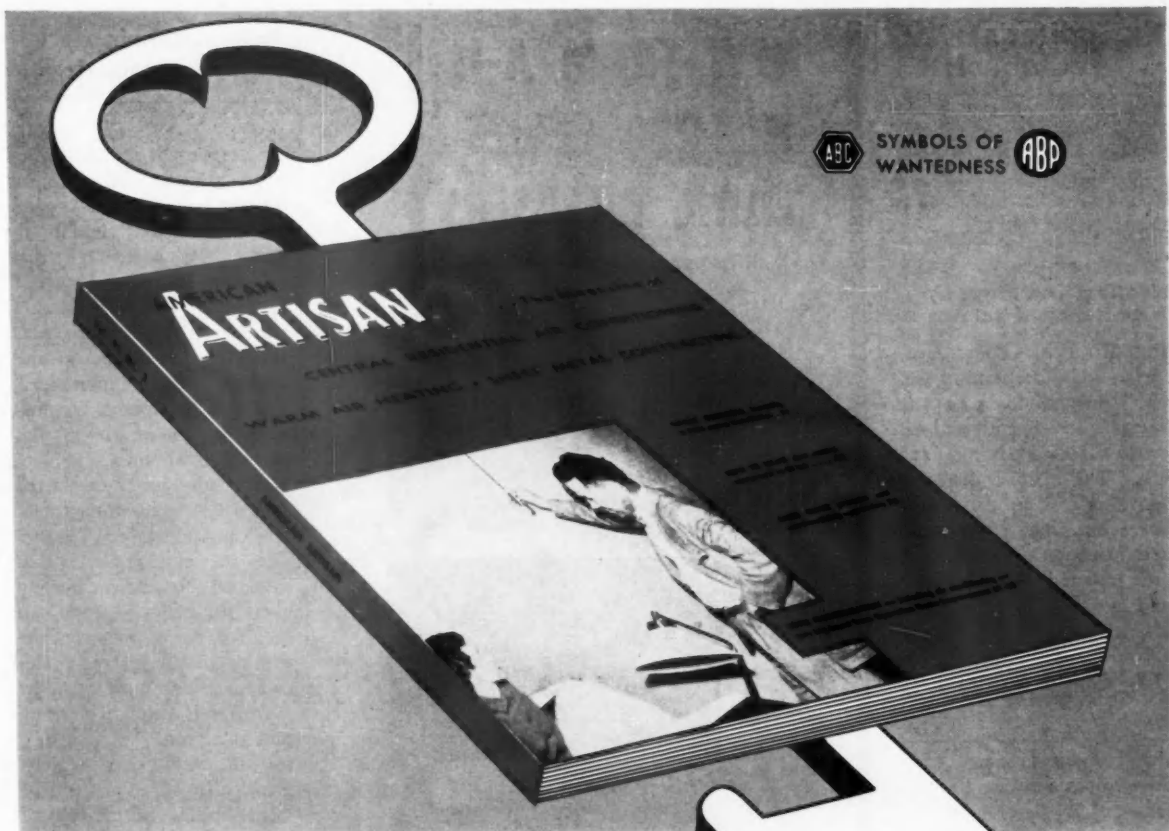
Ninety-nine percent of the customers with service contracts said that the contract gave them a feeling of security and protection. Seven out of 10 fuel oil users, however, were definite in wanting the service contract billed as a separate item rather than included in the price of fuel oil.

Customers without service contracts considered calls for service excessive when the average number of calls per year reached 4.88. Those with service contracts, however, felt they could make 5.80 calls per year for burner service before feeling that the number was excessive.

Good Records Improve Profit Picture

RECENTLY I have been talking to a number of dealer-contractors about their record-keeping systems and have noted that those who keep complete records of their business transactions are having less difficulty in showing a good profit than those whose systems are less thorough. In one of the most efficient systems that I have found to date every piece of equipment delivered to the job site is recorded in triplicate, and space is provided for crediting unused equipment to the job when it is returned by the mechanics. When only two copies of a delivery record are kept, the copies frequently find their way by various routes to the mechanic doing the job and to the office, where the copy is filed with the individual job. A third copy makes it possible for the bookkeeper or clerk to keep a separate file for follow-up of parts used and returned, to charge for those that have been used and to credit those that have been returned to the shop.

It has been found that this



THIS is the book for reaching the KEY factors in

**CENTRAL RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING**

Check . . . and you'll see! 75 to 80% of the total business in Central Residential Air Conditioning, Warm Air Heating, and Sheet Metal Contracting is done by 20 to 25% of the dealers and contractors. These are the KEY dealer-contractors—the concentration of buying power reached so effectively, so provably *only* in AMERICAN ARTISAN. Get the facts on this KEY book, its 100% paid circulation, and the big market it opens up for you. Write us today.

AMERICAN ARTISAN

KEENEY PUBLISHING CO. AIR CONDITIONING HEADQUARTERS

6 N. Michigan, Chicago

the editor's notebook

(Continued)

method prevents leaving equipment on the job that should have been returned to the shop for credit.

Heating Firm Plays Up Importance of Service

BUD COOPER, Cooper Heating and Air Conditioning Co., Cleveland, believes that "Service, intelligently and sincerely applied, brings success." This motto is displayed above a work assignment board on which servicemen's and salesmen's record totals are reported daily, weekly and monthly.

Too Much Humidity in Air Conditioned Homes?

YOUR PROBLEMS with excessive humidity in air conditioned homes during the past summer may have been due to seepage from the outside through basement walls. Water works its way into the house and is absorbed by the air. This places an additional latent heat load on the air conditioning system. At first thought it might appear that nothing can be done to prevent this; however, there may be a cause for the trouble that can be remedied.

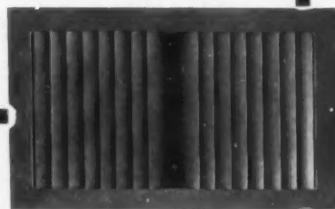
One thing to check is the method of run-off from downspouts. If downspouts are not drained into a sewage system but are permitted to drain into dry wells, water may work its way along the basement foundation, and moisture will eventually penetrate to the inner walls.

Salesmen Earning More This Year Than Last

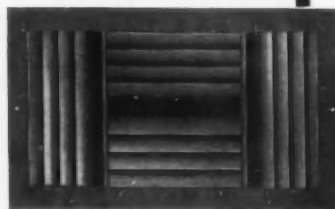
HAVE YOU been having trouble keeping salesmen? Are they unhappy with the amount of money they are earning? Perhaps one of the reasons might be that they have found other sources of

NEW FROM A-J! No. 200 SERIES CEILING DIFFUSERS

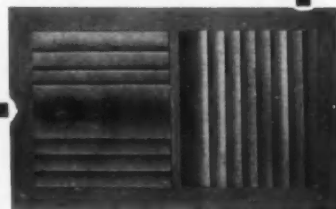
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A-J MANUFACTURING CO.

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Kansas City 27, Missouri

the editor's notebook

(Continued)

employment that are paying them higher rates of return for their *capital*. This doesn't mean that you should increase the percentage that salesmen are paid; however, it might mean that you should take steps to develop leads that they can follow up and convert into sales more readily. This, of course, becomes an advantage for you as well as to the salesmen.

A recent survey conducted by the American Management Association among 32,000 sales personnel indicates that salesmen this year are earning about 4.2 per cent more than they did last year. In the study—the third annual sales compensation survey by A.M.A.—is a section showing that total compensation paid to salesmen varies widely, principally with the level of responsibility and the type of market served. In general, the range of compensation paid to consumer products salesmen is significantly lower than that paid to industrial products salesmen. However, during the past year the average earnings of consumer salesmen increased 6.9 percent while industrial products salesmen increased their take-home pay only 3.2 per cent.

The study reflects what seems to be a trend toward more use of incentive compensation plans. It also shows that salesmen who receive bonuses or commissions are paid lower salaries than are salesmen who work on salary alone, but that, generally, their total compensation is higher.

This study also showed that salesmen today are almost on a par with other employees in terms of benefits such as vacations, retirement, and insurance policies.

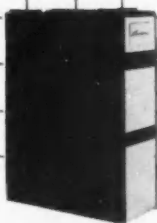
Clyde M. Barnes

EDITOR

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Winter Air
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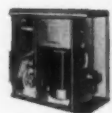
Thus, Luxaire is able to transfer production savings on fine products into lower prices for you!

And you no longer need to decide between excellence and a low price. For Luxaire gives you both!

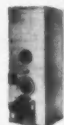
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International Heating & Air Conditioning Exposition . . . January 26th-29th
Convention Hall . . . Philadelphia, Pa. . . Spaces 26, 28, 29

Luxaire EXCELLENCE FOR EVERY INSTALLATION



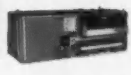
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Winter Air
Conditioning
Units. Burn
either Gas or Oil.



Counterflow
Units and Utility
Units. Burn either
Gas or Oil.



Gravity
Furnaces.
Burn either
Gas or Oil.



Horizontal
Furnaces
4 Oil Burning
Sizes
4 Gas Burning
Sizes



Gas Duct
Furnaces
4 Sizes



Gas Unit
Heaters
5 Sizes



Gas
Conversion
Burners



Combination
Year 'Round
Air Conditioning
Units. 2, 3 or
5 H.P. Air or
Water Cooled.
Burn either
Gas or Oil.



Water Cooled
Add-On
Summer Air
Conditioning
Units. 3 and
5 Tons.



Air Cooled Add-On
Summer Air
Conditioning Units.
2, 3 and 5 H.P.
Compressor-
Condenser
Assemblies available
with Duct or Plenum
Type Cooling Coils.

THE C. A. OLSEN MANUFACTURING COMPANY • ELYRIA, OHIO

Luxaire

HEATING & AIR CONDITIONING UNITS

STANDARDIZE ON HONEYWELL
FOR ALL YOUR
RESIDENTIAL AIR CONDITIONING
CONTROL NEEDS

Now, a new line of

Terminals, reset button and differential are together, needs access from only one side. ----->

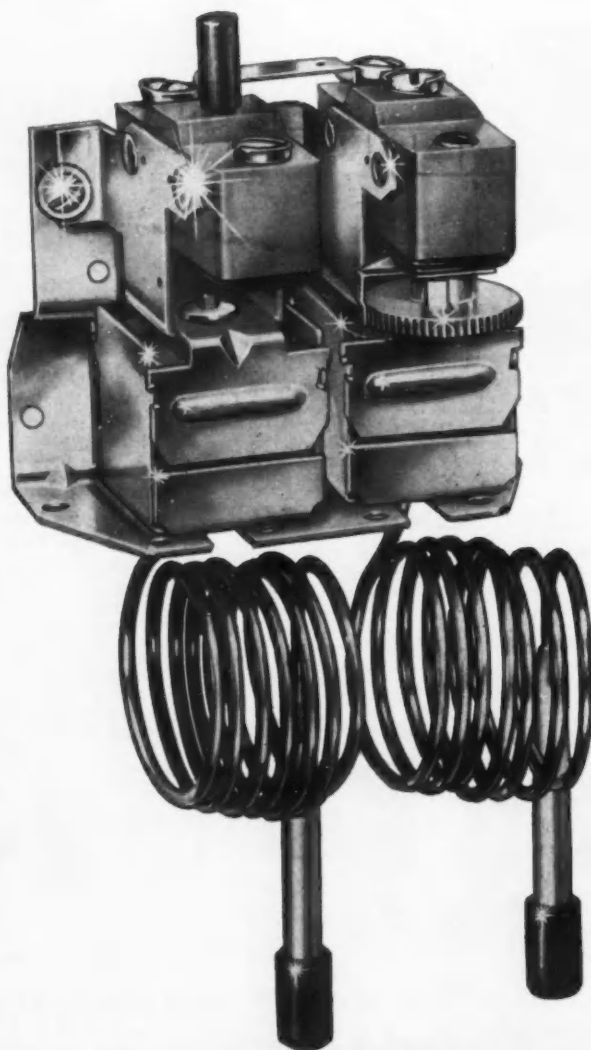
Trouble-free—famous, long-lasting MICRO SWITCH enclosed switch seals out dirt, lint and moisture. ----->

No tweezer parts—a simple, direct-acting switch mechanism. No pivots, levers or springs. ----->

Simple, differential adjustment—knurled differential adjustment knob can be operated by hand without use of tools. ----->

Stainless-steel diaphragm—designed for precision action and lasting operation . . . unaffected by corrosive atmosphere. ----->

One-piece capillary—eliminates the possibility of leaks or weak spots, normally a problem at soldered joints. ----->



pressure controls

HONEYWELL PRESSURETROL*— COMPACT, DEPENDABLE— 11 MODELS TO CHOOSE FROM

This new Honeywell P432 high-low Pressuretrol is compact and functionally designed to meet the needs of today's neat, well integrated control panels.

You can choose the P432—or any of Honeywell's 11 Pressuretrol models to meet the demands of every type of residential air conditioning equipment and a wide range of other refrigeration applications. These Pressuretrols are available as separate high, separate low or combination high-low devices. Both high and low pressure controls can be ordered with manual reset. Low pressure controls can be

*Trademark

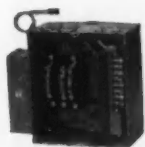
specified with adjustable or fixed differential.

Honeywell Pressuretrols can be ordered as part of a panel or purchased separately.

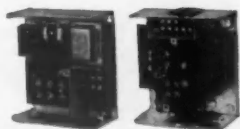
Now you can standardize on pressure controls designed specifically for packaged air conditioning units, made, matched and backed by Honeywell.

Get complete information on Honeywell's line of Pressuretrols and other air conditioning controls. Call your local Honeywell office or write Minneapolis-Honeywell, Dept. AA-12-51, Minneapolis 8, Minnesota.

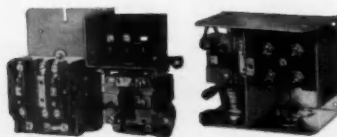
These control panels—for use with Honeywell Pressuretrols—
offer you maximum flexibility



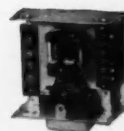
For self-contained units — WB212 panel with pressure control. For larger packaged units.



For attic type units—W429 panel for self-contained, add-on, one-stage cooling units. W430 panel for two-stage, self-contained cooling units (time delay available).



For remote condensing units—(These Honeywell Panels contain motor starter and pressure control). W431 panel for units up to 7½ tons. W435 panel for remote 2-ton and some 3-ton condensing units.



Evaporator Sequencing Panel—W226, designed for use with W431 or W435.

Honeywell



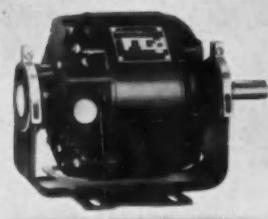
First in Control

Here Experience Counts

Sure, sometimes luck helps out a fisherman ... but in the long run it is experience that pays off. And it is experience that pays off when it comes to solving power-drive problems for appliance and equipment manufacturers ... the kind of experience Emerson-Electric offers you.

Remember ...

- Emerson-Electric produces *custom-engineered* motors to suit *your specific needs*.
- Emerson-Electric has more than 100 engineers for on-the-spot service for you.
- Emerson-Electric has more than 65 years' experience in solving motor-drive problems *like yours*.



EMERSON-ELECTRIC of St. Louis • Since 1890

To get the kind of experience that counts, call, wire or write Dept. M-336 today. The Emerson Electric Mfg. Co., St. Louis 21, Mo.

NOW AGITAIR® REGISTERS and GRILLES (formerly STEWART)

Air Devices Inc., has acquired the complete line of STEWART Registers and Grilles to add to job proven AGITAIR Diffusers, Filters and Exhausters...THERMOTANK High Velocity Mixing Boxes and Punkah Louvres.

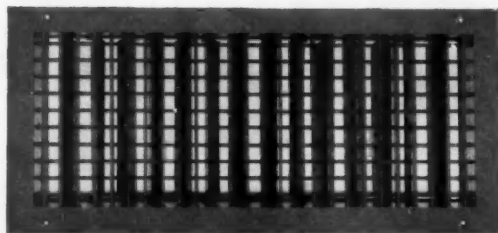
Now from one source, Air Devices Inc., you can select with confidence and specify any AGITAIR product and be assured that the item or items selected will meet every performance and architectural requirement.

All Air Devices Inc. representatives have practical "on the job" experience in the application of Agitair products. They will gladly assist you in the selection, sizing and application of these products.

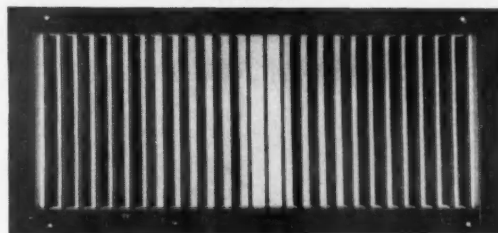
AIR DEVICES INC.

185 MADISON AVENUE, NEW YORK 16, N. Y.

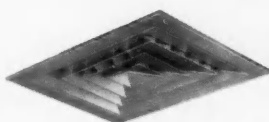
high velocity units • punkah louvers
air diffusers • filters • exhausters
registers and grilles



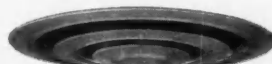
REGISTERS



GRILLES



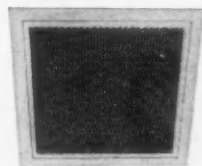
SQUARE &
RECTANGULAR DIFFUSERS



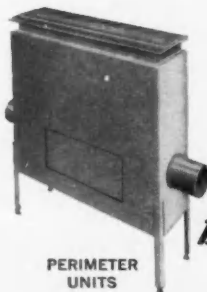
CIRCULAR DIFFUSERS



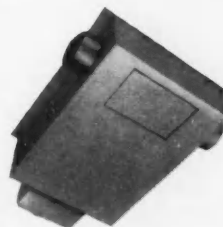
STRIPLINE DIFFUSERS



PERFAIR
PERFORATED DIFFUSERS



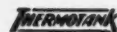
PERIMETER
UNITS



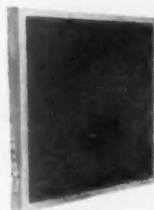
CEILING UNITS



DRUM PUNKAH LOUVRES



ROUND PUNKAH LOUVRES



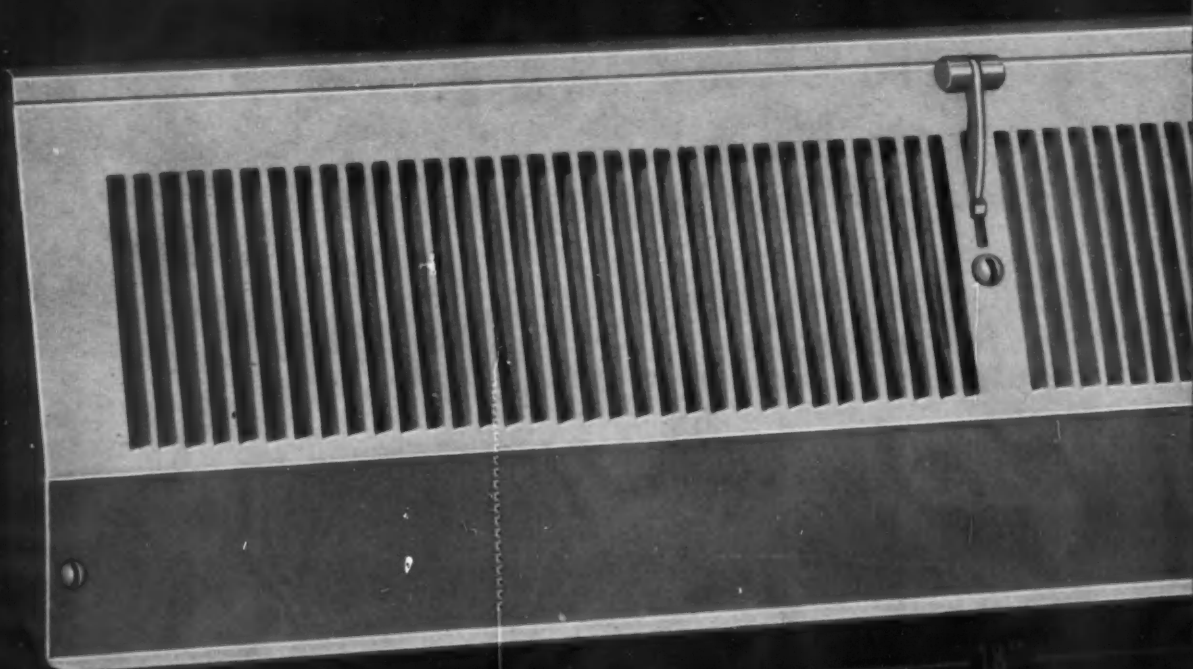
FILTERS



EXHAUSTERS

18" BASEBOARD DIFFUSER

"Perfect Pattern" Air Diffusion



Send for descriptive literature on Auer's complete line of Registers and Grilles for every need, and the name of your nearest Auer distributor.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

OUTPERFORMS 4' to 8' UNITS

AUER

"Perfusaire"

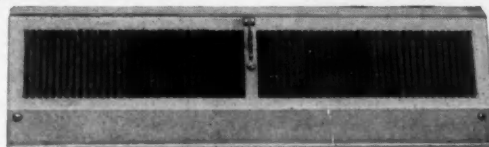
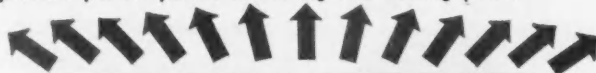
...your best buy for perimeter heating and combination heating and cooling systems!

The Auer "Perfusaire" only 18" long, outperforms 4 to 8 foot units on the market today. Because of the perfect air pattern of the "Perfusaire", diffused air heats entire wall area providing the most even temperatures possible. Through scientifically angled diffuser blades and an engineered built-in damper, maximum throw and spread are obtained. There are no hot spots... no cold spots that result in drafty, uncomfortable and uneven air distribution.

Only the Auer "Perfusaire" provides the engineered accuracy and system dependability required for true perimeter heating and combination heating and cooling. For the very best in baseboard diffusers, insist on the Auer "Perfusaire"... economical... fast, easy installation... satisfied customers... greater profits.

PERFUSAIRE FEATURES:

1. Only 18" long but has the capacity of 4' to 8' units... installs easily in new or old construction in or against wall or baseboard... cuts installation time 50%.
2. "Perfusaire" is a complete unit equipped with Auer's patented balancing damper... no accessories to buy... requires no stackhead.
3. Angle of deflector fins scientifically determined to produce perfect perimeter heating and cooling pattern.



AUER "Perfusaire"

For your next diffuser installation, select and install the Auer "Perfusaire" with complete confidence.

Without a doubt, Auer "Perfusaire" is your best buy for perimeter heating or combination heating and cooling systems. It's been proven time and time again. The Auer "Perfusaire" is the mark of quality and performance in the industry. In addition to its engineered perfection, the "Perfusaire" is easy to install. The "Perfusaire" is provided with "knock-outs" to accommodate duct openings in sizes of either 2 1/4" x 14" or 2 1/4" x 12".



THE AUER REGISTER COMPANY

"REGISTERS AND GRILLES FOR EVERY HEATING AND COOLING NEED"
6602 CLEMENT AVENUE • CLEVELAND 5, OHIO

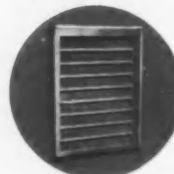
THERE'S MONEY IN MODERNIZATION!



**GET
YOUR
SHARE
WITH
MILCOR
PRODUCTS**



Complete line of
furnace pipe and fittings



Complete line of
louver ventilators—
galvanized and aluminum



Complete line of
roof-drainage equipment

The folks down the block are converting to forced air. It's a job you can do, using Milcor Standardized Fittings.

The people across the street need a gutter job—and you can do it fast and profitably with Milcor Rain-Carrying Equipment.

Someone else needs louver ventilators. Another is adding summer air conditioning. Still others are building additions to their homes.

It all adds up to this: Remodeling

and repair work represents *money that is going to be spent*. You've got the skill. You've got the manpower. And — the complete Milcor line gives you all the materials you need.

You can get *your share* of this profitable remodeling market by developing a strong advertising campaign in your community. Your local printers, newspapers and radio stations can help you. Sit down with them and start planning your campaign. But — do it today!

Member of the **INLAND** Steel Family

MILCOR®

INLAND STEEL PRODUCTS COMPANY

DEPT. L, 4023 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN ATLANTA • BALTIMORE • BUFFALO • CHICAGO
CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • KANSAS CITY • LOS ANGELES • MILWAUKEE • MINNEAPOLIS
NEW ORLEANS • NEW YORK • ST. LOUIS

CP-17

U of I Develops Engineering Teacher Plan

URBANA-CHAMPAIGN, ILL. — Prof. S. Konzo has been named by Dean William L. Everitt, University of Illinois college of engineering, to head an engineering teacher "internship" program being set up in the college under a \$207,000 Ford Foundation grant. The program, proposed and developed by Prof. Konzo, is designed to help overcome the growing shortage of engineering teachers.

"Participants are expected to come from all parts of the country," Dean Everitt said. "Two-year internships will enable them to complete work for a master of science degree. This will be one-third of the program. In the other two-thirds they will receive instruction and practice in educational methods and theory under experienced teachers, and will take part in seminars to build their professional backgrounds."

New Record Set In Shipments of Gas-Fired Furnaces

NEW YORK CITY — September shipments of gas fired furnaces for residential central heating set all time records, according to the Gas Appliance Manufacturers Association. Shipments of gas conversion burners were reported at the highest monthly level in two years.

During the month, manufacturers shipped 107,300 gas fired furnaces of the forced warm air and gravity types, 14.3 percent more than in the same month a year earlier. The previous high was reached in September 1955 when 106,700 units were shipped.

During the first three-quarters of the year, manufacturers shipped 585,400 furnaces, 12.6 percent more than in the same period last year.

February Starting Date for 1959 Apprenticeship Contest

CHICAGO — The 1959 national apprenticeship contest will begin Feb. 1 and close Mar. 31, it was announced by Joseph J. Kaberlein, secretary of the National Joint Apprenticeship and Training Committee for the Sheet Metal Industry.

There will be different projects, one each for the four years of classification. This permits apprentices to compete with others who have the same range of training and ability.

A cash prize and a certificate will be awarded to first, second and third place winners in each of the four classifications. The cash prize for first place will be \$125, \$50 for second, and \$25 for third.

In addition, a certificate of merit

will be presented to each school having a winning contestant in the national contest.

Local joint committees are to request contest materials from Mr. Kaberlein and then conduct their own local contests. The local winners will then be entered in the national contest.

To obtain contest materials, write to J. J. Kaberlein at 6543 Nokomis Ave., Lincolnwood 46, Ill. Be sure to state the number of apprentices interested in entering the contest in each classification. These requests should be submitted as soon as possible. Contest material will be mailed shortly after the first of the year to local committees who make the request.

A plaque will be awarded to the local joint apprenticeship committee which makes the greatest progress in promoting the apprentice program.

Building Contracts Up 26% for Month Of September

NEW YORK CITY — Contracts for future construction in the United States in September totaled \$3,215,919,000, an increase of 26 percent above the like month of 1957, F. W. Dodge Corp. reports.

According to Dodge reports, residential building contracts in September totaled \$1,460,270,000, up 27 percent from the similar month of a year ago. Residential contracts for the first nine months of 1958 totaled \$10,945,492,000, up 7 percent over the like 1957 period.

During the third quarter of 1958, the American Appraisal Co. Construction Cost Index (national average) rose 10 points, as compared to six points for the same period in 1957. This increase was largely caused by higher labor rates which were negotiated during this period and an increase in steel prices which took place in August, the company says.

Directory Section In Next Month's Issue

AMERICAN ARTISAN's Directory of Residential Air Conditioning, Warm Air Heating and Sheet Metal Products—completely revised and brought up to date—will appear in the January issue.

To obtain information on what products will be available during 1959, listing sheets were mailed to thousands of firms throughout the country that manufacture the hundreds of items used in residential air conditioning, heating and sheet metal work. The information is carefully classified and includes complete street addresses and trade names.

The January issue also contains its regular quota of timely and informative articles on technical, merchandising, management and news subjects.

(More news on page 24)

Another new fastener idea by Parker-Kalon

SPINNERS?

Screws on the floor mean trouble at your door! Ordinary fasteners when used in the assembly of thin gage metal sheets, often spin or slip—result in work stoppages, salvaging operations, higher production costs.

Now you can substantially reduce waste motion; rejects and lost time, with Parker-Kalon's new "Hi-thred" Self-tapping Screw . . . the new fastener that grips securely without spinning or slipping . . . even in very thin gage metal sheets.

Developed by P-K's research team, the revolutionary "Hi-thred" is **THREADED FULL TO THE HEAD—WITH THE LAST THREAD ACTUALLY TERMINATING IN AN ANNULAR ORIFICE IN THE HEAD ITSELF!**

For samples, see your nearby Industrial Distributor. "Hi-thred" fasteners are available in production quantities at no increase in price in Types "A" and "Z" in non-countersunk head styles, in either Slotted or Phillips Recessed Heads.



PARKER-KALON® "Hi-thred"

Pat. Pending

Self-tapping Screws

'Sold everywhere through leading Industrial Supply Distributors'

PARKER-KALON DIVISION, General American Transportation Corporation, Clifton, New Jersey



thinking of your future?

Look to Chrysler Airtemp . . .

If you're the kind of man who likes to look ahead, plan ahead . . . look into the new Chrysler Airtemp dealer program. It's designed especially for you. In it you'll find the larger profit potential, the complete merchandising programs, the aggressive advertising support, and the new product development activities you've been looking for.

Here are just a few of the reasons why forward-looking dealers look to Chrysler Airtemp.



first with the finest in air conditioning

Complete Market Coverage for Greater Sales Potential

Chrysler Airtemp dealers sell the most complete line in the industry. Almost 300 models let you satisfy any heating or cooling need!

Chrysler Reputation for Quality and Dependability

Your customers know and respect the quality and dependability of famous Chrysler engineering. Sales are easier to make. Fewer customer complaints and call-backs cut service expenses—boost profits!

First with the Finest in Design and Engineering

Airtemp's record of developing important new features and improvements is unequalled in the industry. As an Airtemp dealer, you will have the newest features *first!*

Well-Rounded Dealer Support

Not only in product development, but in advertising, merchandising, sales and service training as well, Chrysler Airtemp offers its dealers the complete support they need for maximum sales and profits.

*Start building for tomorrow today!
Send coupon below for full details.*

AIRTEMP DIVISION, Chrysler Corporation
Dayton 1, Ohio

AA-12-58

Gentlemen: Please rush full information on the Airtemp franchise!

NAME _____

ADDRESS _____

CITY _____

ZONE _____ STATE _____

Launch Certification Program For Unitary Air Conditioners

WASHINGTON, D. C. — A certification program for unitary air conditioners, sponsored by the Air-Conditioning and Refrigeration Institute in cooperation with the National Warm Air Heating and Air Conditioning Association, will go into effect January 1. Unitary air conditioners include central residential units, self-contained air conditioners such as those used in commercial applications, and other air conditioning combinations designed as units, as differentiated from room coolers or large, field-assembled system installations.

The program is based on compliance with all provisions of ARI Standard 210-58, and provides that cooling capacity ratings of unitary equipment be expressed in Btuh or

tons, and not in horsepower of compressor motors.

A number of manufacturers have already entered into contract agreements with ARI and others are expected to sign in the near future. Under this agreement, manufacturers certify to ARI by submitting data, and certify to the public by display of a certification seal, that their products are in compliance with the ARI Standard. The seal may be displayed on the equipment as well as on specifications, advertising, etc.

The plan also calls for the "random" testing, by an independent testing laboratory, of a large number of certified units each year, to be acquired from field stock for this purpose. Another phase of the program involves the testing of certified units on which complaints may be received as to unrealistic cooling capacity claims and other allegations of non-conformance with the Standard.

ASHAE Nominates Hess for President

NEW YORK CITY — Arthur J. Hess, president of Hess-Greiner & Polland, Los Angeles, has been nominated for president of the American Society of Heating and Air-Conditioning Engineers. Mr Hess is now serving as first vice president of ASHAE and chairman of the executive committee. During 1957 he was second vice president of the society and chairman of the regions central committee. He has been a member of the society council since 1954. Walter A. Grant, vice president and assistant to the president of Carrier Corp., has been nominated for first vice president, and John Everetts Jr., consulting engineer with Charles S. Leopold, Philadelphia, has been nominated for second vice president. John H. Fox, vice president, sales, Honeywell-Controls, Ltd., Toronto, who has served as treasurer of the society this year, has been nominated to serve for a second term in this capacity.

NEMA to Launch Water Heater Sales Campaign

ATLANTIC CITY, N. J. — All-out promotion drives to help dealer-contractors increase sales of electric water heaters will be launched soon by member companies of the National Electrical Manufacturers Association, it was announced at the opening of NEMA's 32nd annual convention. The campaigns are aimed at increasing volume by cooperating with the industry's two main avenues of approach to the market—the Live Better Electrically Project and the National Electrical Living Program—and by stepping up NEMA's work in consumer education and promotional areas. The National Electrical Living Program will be sponsored next year by the Edison Electric Institute.

1958 Volume Index To Be Available

AN INDEX FOR American Artisan's 1958 issues, Vol. 95, Nos. 1-12, is being compiled and will be available soon to Artisan subscribers on request. If you want a free copy, send a note to the Editor, American Artisan, 6 N. Michigan Ave., Chicago 2.

Your request will be kept on file until the index is printed, and then your copy will be mailed.

Women Tell What They Want From Heating System

WASHINGTON, D. C. — Eighty women from different parts of the country attended the recent Women's Conference on Housing, sponsored by the National Association of Home Builders and the United Industry Committee for Housing, a group representing manufacturers and service industries in the housing field. At the session on heating of the home, the women listed as prime factors of interest evenness of heat flow, freedom from dust, humidity control, cost of installation and operation, and low noise level. They wanted brochures from builders explaining what the home owner should do to help maintain his heating system. And they wanted more information, in general, on fuels, economy of operation, etc. They said they thought a heating system should last at least 20 years. Most of them wanted furnaces located outside of living areas.

At the McCall sponsored second annual Congress on Better Living, approximately half of the women in attendance indicated a preference for central air conditioning over individual room units. (About one-third of the delegates' homes are air conditioned at present and only one-third of these now have a central system.) A few of the women said they wanted no air conditioning at all.

(More news on page 26)

Salesmen Need Tools Too!



THIS DEMONSTRATOR PROVES VICTOR FINS SAVE FUEL!

It's the finest, most believable little sales closer on the market today. Twin thermometers tell the story of patented VICTOR FIN efficiency. One side of this table-top furnace has FINS. The other does not. It proves, right before the prospect's eyes, that exclusive VICTOR FINS save up to 30% in fuel used. It's honest . . . It's dramatic . . . It closes sales FAST!

VICTOR

VICTOR SUPPORTS YOUR SALESMEN WITH TOOLS WHICH CLOSE SALES FAST

Sales Tools:

TABLE-TOP FIN DEMONSTRATOR

SALES EASEL

20 YEAR WARRANTY

2 & 3 COLOR FOLDERS
SALES CATALOGS
ROAD SIGNS
TRUCK DECALS
NEWSPAPER MATS
RADIO SPOT COPY
COUNTER DISPLAYS
WALL HANGERS

You wouldn't think of sending your servicemen out without tools . . . but, are you and your SALESMEN fully equipped with effective tools to sell successfully in today's competitive market? There is no finer line of fast closing sales tools in the industry than those made available by VICTOR to their dealers everywhere. No expense, ingenuity, time nor research has been spared to assure you success and bigger profits from faster sales with VICTORS! A complete line of Coal, Gas and Oil Low-boys, Hi-Boys, Counterflows and Suspended units to meet every installation problem is ready for speedy shipment. Write, Wire or Phone us TODAY! You'll make more money with the VICTOR heating and cooling line!

MAIL THIS COUPON TODAY

HALL-NEAL FURNACE CO.

Quality Furnaces Since 1890

1322-42 N. CAPITOL AVE.
INDIANAPOLIS 7, INDIANA

HALL-NEAL FURNACE CO.

1322-42 N. CAPITOL AVE., INDIANAPOLIS 7, INDIANA

Please send complete information about an exclusive VICTOR Franchise and details of your dealer sales tools, without obligation.

NAME _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

WHAT'S HAPPENING . . . including Washington Letter

(Continued from page 24)

Economists Optimistic About Business Outlook

NEW YORK CITY — Leading economists are far more optimistic about the business outlook than they were this time last year, according to the 12th annual economists' opinion survey conducted by F. W. Dodge Corp. Of the 212 participants, all but two economists expect gross national product to rise next year above its mid-1958 level, and all but four think industrial production will show a similar trend. On the average, they expect gross national product to reach an annual rate of \$460 billion by the fourth quarter of 1959, a rise of about 4½ percent during the year.

Show Section to Be January Feature

A SPECIAL 32-page show section is being prepared for the January issue of *American Artisan*. It will describe what you can expect at Philadelphia's Convention Hall where the 14th International Heating & Air Conditioning Exposition will be held January 26-29. Over 450 exhibitors will take part in the industry's largest show to date.

Artisan's special show section will name the exhibitors and their booth numbers and tell who will be in attendance. It will also describe the products to be on display during the four-day exposition. This special section is designed to tell you at a glance who to see, what to see, and where to see it.

Farm Market Favorable For More Heating Sales

WASHINGTON, D. C. — Dealer-contractors may soon find that farm houses are a rapidly growing source of warm air heating sales. According to a report recently released by the Chamber of Commerce of the United States, income of the nation's farmers went up 22 percent this year.

Board Approves L.A. Heating Code In Part Only

LOS ANGELES — The Board of Building and Safety Commissioners has approved a modified provision requiring the signature of a registered professional mechanical engineer on plans and specifications for large installations of heating, ventilating or air conditioning equipment. Referred back to the industry advisory committee are three items the board deleted from the proposed revised heating, ventilating and air conditioning code. As a result, the committee's proposed code, which now goes to the City Administrative Officer, the Council, and the Mayor for necessary ordinance enactment, will not have the following three provisions:

A requirement that would have had evaporative coolers inspected by heating and refrigerating inspectors. These coolers already require an electrical permit.

A requirement that would have prohibited the use of tin plate for metal ducts in residential heating systems and the requirement for 1 in. of insulation in residential heating systems.

A requirement for the installation of vents on heaters legally installed in existing buildings.

Comfort Responses Re-Evaluated

CLEVELAND — Comfort responses in certain regions of the ASHAE Comfort Chart are now being re-evaluated at the research laboratory of the American Society of Heating and Air-Conditioning Engineers. According to E. F. Snyder, Jr., chairman of the ASHAE committee on research, this is but one of a number of long term projects planned for the new environment test room completed this year. The room is arranged for testing six to 10 people at one time.

Pension Plan Law Goes Into Effect January 1

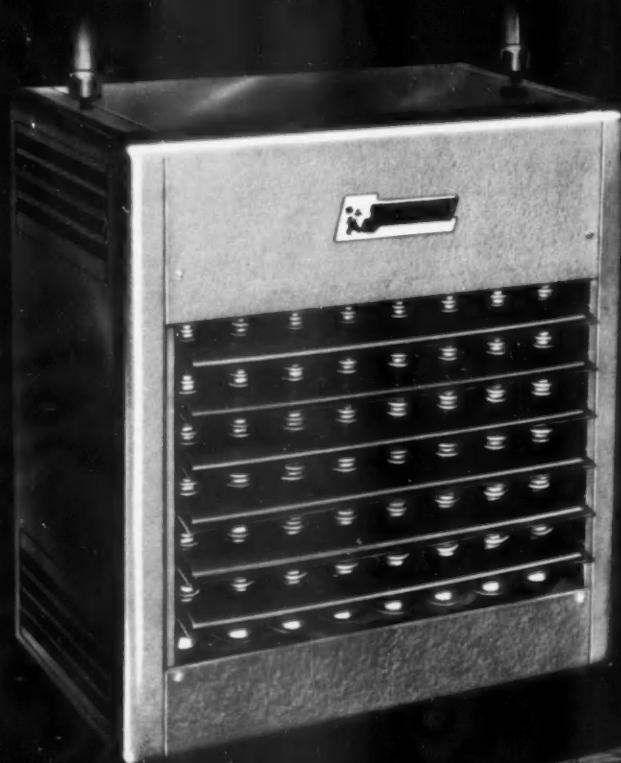
WASHINGTON, D. C. — The law requiring disclosure of the finances of pension and welfare plans goes into effect January 1. To assist employers in complying with the new law, the Department of Labor is preparing forms for the required reports to the department—a description of the plans and the annual financial report. Use of the forms is optional, the employer being free to use other forms and work out his own reports. The act will apply to private employee welfare and pension plans covering more than 25 employees. Deadline for sending your plan description to the department is March 31. If you're on a calendar-year basis, your first financial report won't be due until April 30, 1960. If you're on a fiscal year basis, it will be due 120 days after the year ending in 1959. That makes the deadline Nov. 1, 1959 for those using the usual fiscal year closing next June 30.

Takes Stand Against 'Forced Obsolescence'

SYRACUSE, N. Y. — The Unitary Equipment Div., Carrier Corp., is taking a firm stand against the concept of forced obsolescence, according to Russell Gray, division vice president and general manager. "We will no longer change models each year just for the sake of change or on a calendar cycle," Mr. Gray said. "But we will be on the market with new models when there are significant advances in performance and design. Our decisions will be guided by the relative advantages to the consumer."

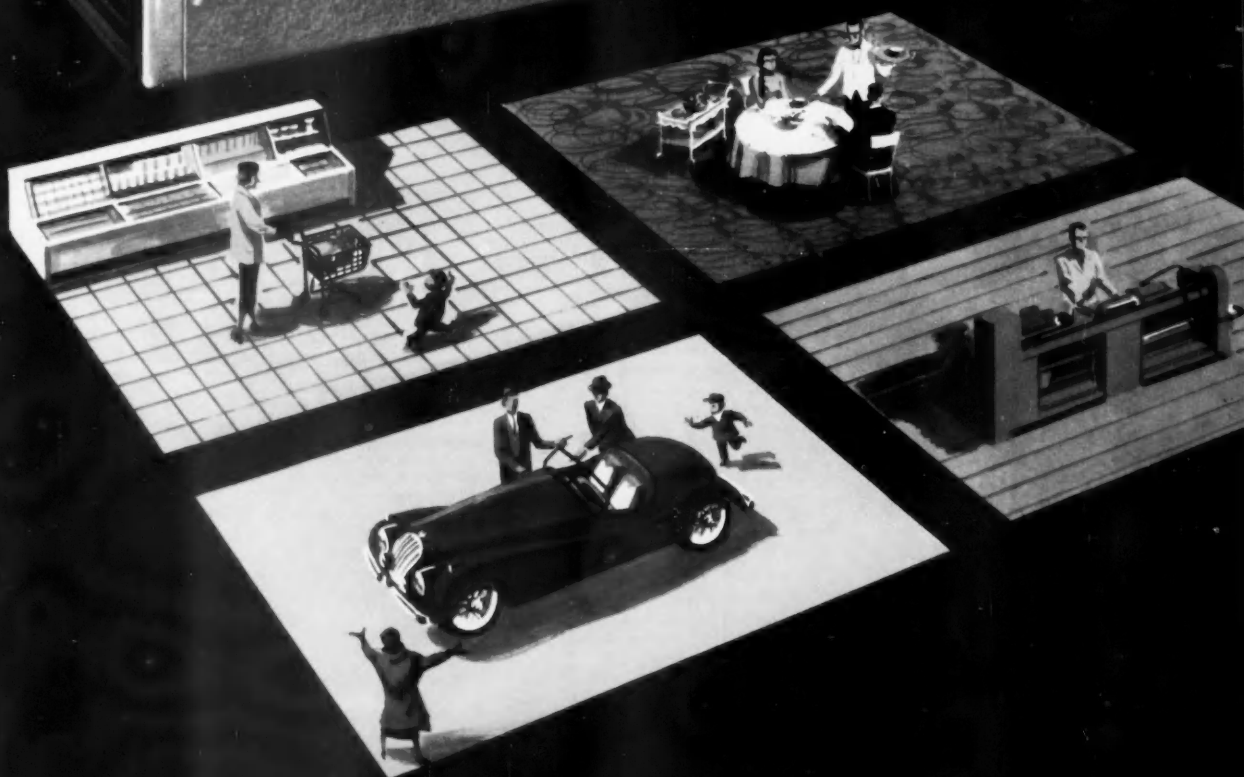
"Our new policy must necessarily become effective over a period of time and cannot become completely applicable to all 1959 models. But, long range, we will not force obsolescence merely because of a different knob, a change in color or the location of a control."

the quality tells... the quality sells

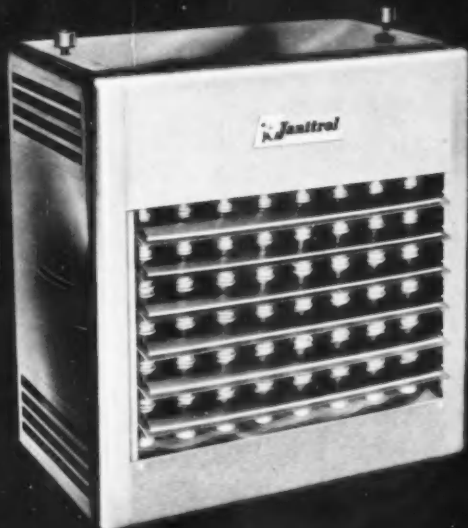


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UNIT HEATERS



provide fast, clean heat for a variety of applications



Sell and Grow with

JANITROL

Gas-fired Commercial and Industrial Heating Equipment

VERSATILE NEW JANITROL UNIT HEATERS

Remember this about Janitrol Unit Heaters: their versatility and efficiency, combined with low cost, means you can use them to advantage for most every commercial or industrial building.

They save installation time and labor. They do not need expensive duct work. They are completely automatic. They offer convenient "dual fuel" performance—use natural or LP gas; may be switched from one fuel to the other automatically. And

they direct heat *where* needed only *when* it is needed—assure top operating economy.

And remember, too, that no other unit heater can match their record for durability and low maintenance. The exclusive Janitrol Multi-Thermex heat exchanger is so enduring that replacements for any cause have been less than 1/4 of 1% in over two million heat exchanger tubes produced since 1940!

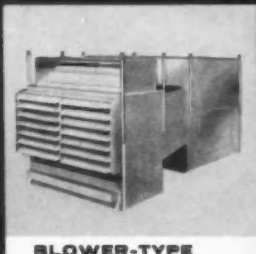
Dependability and economy—these are benefits that only time and experience can bring. Be sure Janitrol Unit Heaters are the choice for your next job.

Fill every commercial and industrial heating need from JANITROL'S broad line . . .



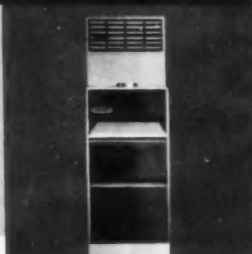
**GAS-FIRED
DUCT FURNACES**

Engineered for installation in a duct where air is circulated by a separate blower. Especially adaptable for use in combination with cooling. Two sizes: 200,000 and 300,000 Btu/hr. input—may be combined to provide capacity from 200,000 Btu/hr. up, in increments of 100,000 Btu/hr. input. Five sizes, from 85,000 to 225,000 Btu/hr. in Duct 55 models.



**BLOWER-TYPE
UNIT HEATER**

Allows air delivery from greater heights and against greater static pressures. Models with exposed or enclosed blowers. A.G.A. approved as low and high static-type blower unit heater for air delivery to duct system up to 1.0 in. W.C. external static. Heat sections factory assembled. Sizes: 300,000, 400,000 and 500,000 Btu/hr. input.



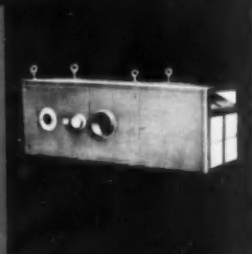
**FLOOR-TYPE
UNIT HEATER**

Cold air drawn from floor level is heated, filtered and discharged horizontally overhead. Quiet, clean, carefree—ideal for offices, restaurants, stores, labs, etc., requiring a compact unit. May also be connected to a duct system. Six sizes: Rated input from 65,000 to 200,000 Btu/hr.



**HEAVY DUTY
BLOWER HEATERS**

For unit heating, central heating and air conditioning. Wide range of standard blowers and motors assures correct air delivery and temperature rise in each application. Factory assembled and tested. Capacities from 250,000 Btu to 1,750,000 Btu/hr. input.



**NEW JANITROL
HORIZONTAL OIL
UNIT HEATER**

For suspension overhead. Saves floor space. Compact, efficient, low-maintenance design. May also be used to feed duct system. Sizes from 84,000 to 250,000 Btu/hr. output.

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CONTRACTORS *information service***

Write today for complete information on heating with gas in buildings of every type. There's no obligation.

JANITROL

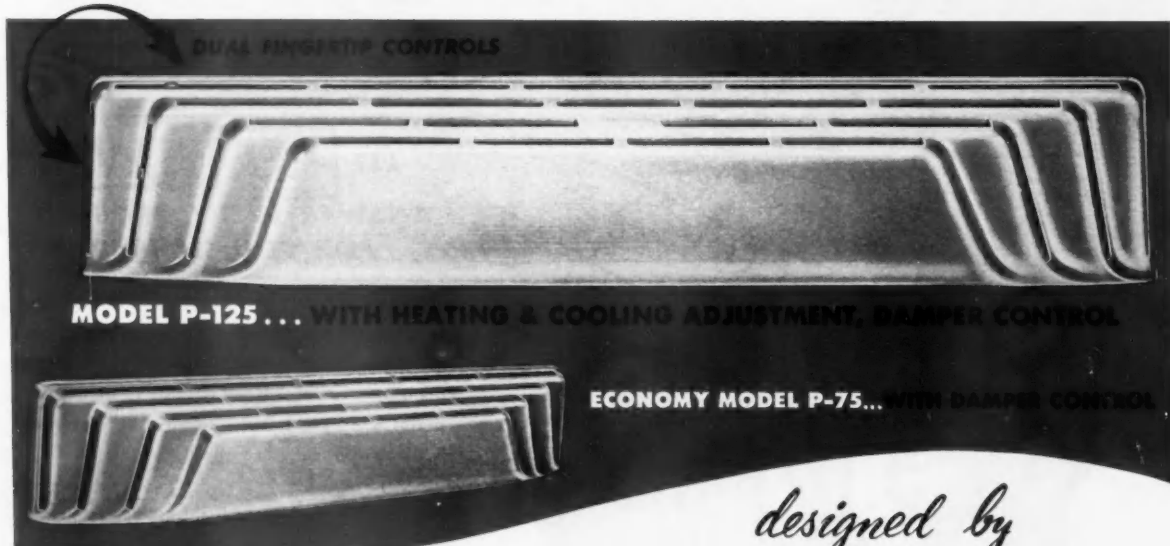
HEATING AND AIR CONDITIONING DIVISION
Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Moffat Heating & Air Conditioning Division
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Also Makers of Surface Industrial Furnaces, Kathabar Humidity Conditioning, Janitrol Residential Heating and Cooling Equipment

NEW

... today's first
adjustable—FOR—HEATING
adjustable—FOR—COOLING

PERIMETER DIFFUSERS



designed by

TITUS

Today's MOST ADVANCED DIFFUSERS . . . AT A TRULY COMPETITIVE PRICE. Obsolete ALL others in APPEARANCE . . . DESIGN . . . PERFORMANCE!

Because they are FULLY ADJUSTABLE . . . the new Titus MODEL P-125 diffusers are today's only baseboard diffusers that can provide the proper throw and spread for obtaining maximum performance from BOTH HEATING AND COOLING SYSTEMS.

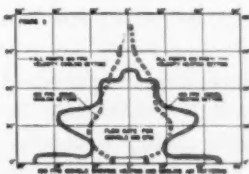
Years ahead in looks, too! New distinctive swept-line styling blends beautifully with any surroundings.

New ECONOMY MODEL P-75 has same, superb styling and basic ADVANCED design as Model P-125 except does not have dual adjustment feature. CAN GIVE YOU THE CONTRACT AGAINST ALL KINDS OF PRICE CUT BIDDING BECAUSE THEY ARE BETTER LOOKING, ARE CONSTRUCTED BETTER, ABSOLUTELY OUTPERFORM COMPETITION.

Both of these new Titus models have a large 32 sq. in. of free area. Both are quicker, easier to install. Provide lasting satisfaction — GIVE THAT EXTRA IN HEATING & COOLING COMFORT THAT MAKES AND KEEPS CUSTOMERS HAPPY.

PROOF!

Isovels from laboratory tests prove Titus new adjustable perimeter diffusers FAR SUPERIOR in PERFORMANCE! Dotted red line shows how cool air is forced to ceiling when Model P-125 diffuser is set for COOLING. Solid red line shows that when diffuser is set for HEATING warm air is diffused in broad pattern so it covers entire window or wall area.



WRITE FOR FREE CATALOG

TITUS MFG. CORP., WATERLOO, IOWA

- ☐ Rush new free illustrated Titus Perimeter Diffuser Catalog
☐ Send name of jobber nearest me

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____



CHECK THESE PROFIT POINTERS!

- How many call-backs do you have to make for service and adjustments on the furnaces you sell?
- Do you spend time "selling" the brand you stock? . . . have conversion trouble in LP areas?
- Do you always have the right model for your prospect's home? . . . a full line to choose from?
- Do you make your share of the contractor sales?
- Do other problems sap your profits, shrink your markup during the year?



can you afford to sell your present line?



LET

HEATWAVE
HEATING
AIR CONDITIONING

**ANSWER EVERY PROBLEM
FOR YOU IN 1959**

HEATWAVE parts are the best the industry has to offer and are standard with the trade . . . to minimize service problems. But the important thing is that costly service calls won't shrink your profits when you install Heatwave because they just won't be necessary at all!

HEATWAVE furnaces sell themselves to homeowners with proof of lower gas bills, quiet operation, ideal circulation, and models to fit any home. AND—they're built for either natural or LP use.

HEATWAVE offers a line that is becoming FAMOUS for fitting every home! Offered in sizes from 60,000 to 200,000 BTU input.

HEATWAVE, backed by the F. E. Myers & Bro. Company, is a respected name among builders who want to buy a line that will still be good 10 years from now!

HEATWAVE IS THE FASTEST-GROWING NAME IN YEAR-ROUND AIR CONDITIONING TODAY . . . BECAUSE OF BUILT-IN PROFITS FOR MEN LIKE YOU! Get the Heatwave story and start your next season with more assured profits! Remember, **HEATWAVE IS EXPANDING!** Get full information on dealer openings in your area! Write Ben Church, Sales Manager, Southwest Manufacturing Company, Aurora, Missouri.

HEATING
HEATWAVE
AIR CONDITIONING

A Product of The Southwest Manufacturing Company, Aurora, Missouri
A Subsidiary of The F. E. Myers & Bro. Co., Ashland, Ohio
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WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS

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NL = Night Letter

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BRAUER SUPPLY CO.

2100 WASHINGTON AVENUE

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GRILLES AND REGISTERS RECEIVED 9/2. SHIPPED COMPLETE

TODAY 9/5 VIA RAILWAY EXPRESS B/L 1406. THIS WIRE OFFERS

OPPORTUNITY TO EXPLAIN FAST SERVICE ON AIR CONDITIONING

GRILLES. ORDERS FOR NON STANDARD SIZES ARE ASSEMBLED AND

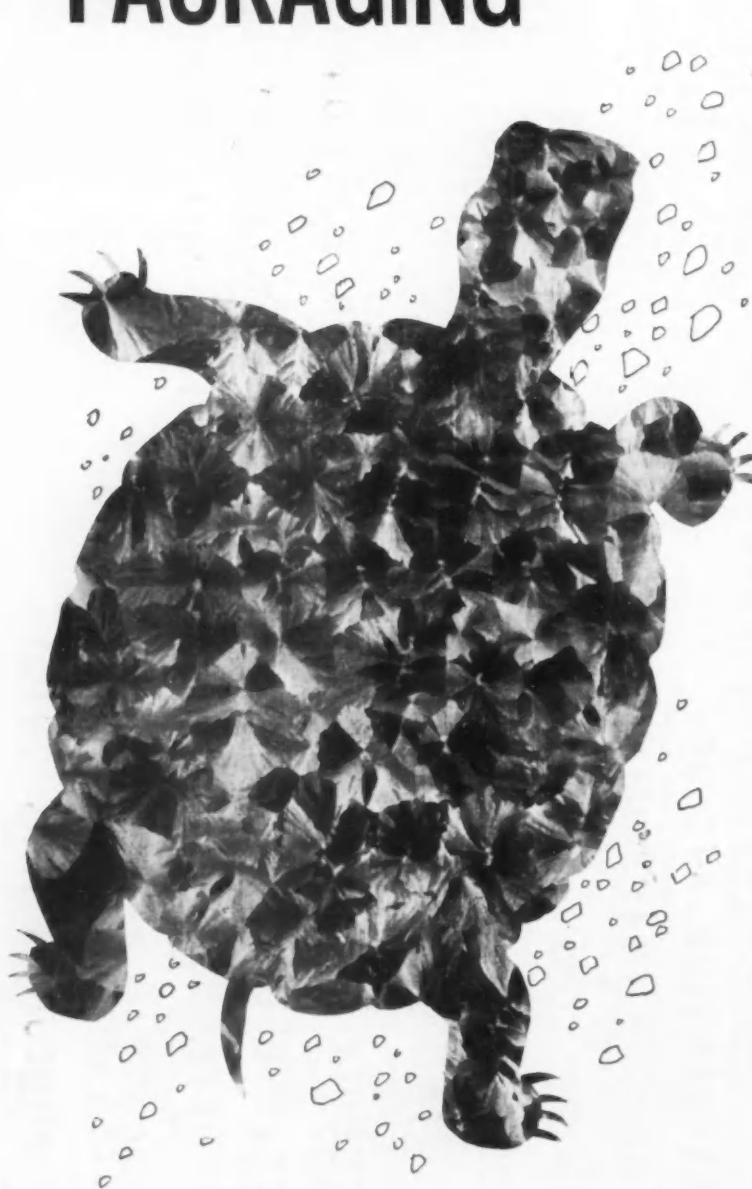
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1. **One sure source for all requirements**—whether steel is plentiful or scarce, nobody approaches the size and variety of Ryerson stocks.
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Principal Products: Carbon, alloy and stainless steel — bars, structurals, plates, sheets, tubing — aluminum, industrial plastics, metalworking machinery, etc.

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'Do It Yourself' for Home Owners

MOST HOME OWNERS like to "fool around the house" in their spare time. Some have directed this drive toward hobbies and have spent considerable money building basement workshops. Too often, over-ambitious home owners will tackle jobs requiring technical knowledge and training which exceed their limited backgrounds, skills, and available time. Dealer-contractors who can direct this home owner interest toward maintaining heating equipment in tip-top condition are performing a service to their customers as well as helping build reputations for their businesses.

A reputation for installing trouble-free equipment has excellent sales promotional value as well as reducing the cost of providing free service during the first year.

We don't suggest that home owners be trained to service their own heating systems, but that they can be shown how and why they should pay more attention to their heating systems. Chester C. Duval, Lexington, Mass., has developed this idea to his advantage as well as to that of the home owner (see page 64 for details).

Home owners can be shown that periodic attention to the heating system can produce savings in operating and service costs, as well as providing personal satisfaction. By posting detailed instructions near the equipment, providing personal instruction when the installation is completed, and volunteering periodic reminders, the dealer-contractor can teach home owners to recognize improper operation.

Some manufacturers offer educational booklets and other literature to their dealer-contractors, to be sent to owners of warm air heating systems. December is a good month to put this type of sales promotion to work, when home owners are more aware of their heating systems than they've been for many months. Another good reason for making mailings at this time of year is to avoid as many equipment failures as possible during the coldest months just ahead.

Any effort to curtail the deluge of service calls to be expected during a prolonged sub-zero spell will help level off the work load on the service department.

Advice to home owners should be worded simply and briefly to avoid misunderstanding of what should or should not be done. Mr. Duval spells this out in three steps: 1) periodic maintenance, 2) emergency maintenance, and 3) skilled service work.

If manufacturers' literature doesn't present the desired personal approach, dealer-contractors can easily prepare their own mailings. In some ways this policy works out better, in that it permits changing the approach and re-using the basic sales promotion idea several times a year. An advantage of using manufacturers' literature is that the literature is usually well prepared and has a professional appearance, obtained through extensive use of color, diagrams, photographs and other presentation tools which might be too expensive for the limited scope of local level promotion.

Effective literature will cultivate interest and encourage the home owner to seek better heating at lower cost i. exercising his natural inclination to "putter around the house."



*American Artisan's editors,
staff and authors wish you
all a Merry Christmas and
a Happy New Year*

1954

1955

1956

1957

1958

CAREFUL PLANNING of building paid off for this dealer-contractor. Office area in front provides easy access to rest of shop, yet is removed from noise



Behind This New Building Are Years of Planning

This dealer-contractor took many years to develop the design and layout of the shop and office sections of his new building. His reward is a pleasant atmosphere and efficiency

WHEN PLANNING to build a new shop and office it pays to take the time to carefully consider each of the many items that go into its design and layout, according to



EXHAUST SYSTEM for welding department is protected from short circuiting air currents by metal panels that drop from ceiling to within 8 ft of floor

Irving Hangauer, general manager, H. J. Otten Co., Buffalo. Mr. Hangauer and the late Mr. Otten planned for several years before coming up with the final instructions for the architect to follow in designing their sheet metal shop. The result is a pleasant and spacious building with work areas planned for efficient operations.

The Otten company's building contains 17,000 sq ft divided into an office section and a shop section. The office section is constructed of dark red brick. The shop section has cinder block walls which are painted a pale rose color on the exterior to give a pleasing contrast with the office section.

The 2000 sq ft of office area includes a combination reception room and general office and four private offices. The company's bookkeeper and secretary occupy the general office area. Two of the private offices are larger than the others (12 × 16 ft) and are used as an engineering office and a sales staff office.

In the office area the lower part of the walls is painted a dark green and the upper portion a contrasting yellow. The ceiling is white acoustical tile. Fluorescent lighting is used throughout the building. All interior doors are metal. The outer offices have large picture type windows which give them a pleasant and bright appearance. The result is an enjoyable working atmosphere.

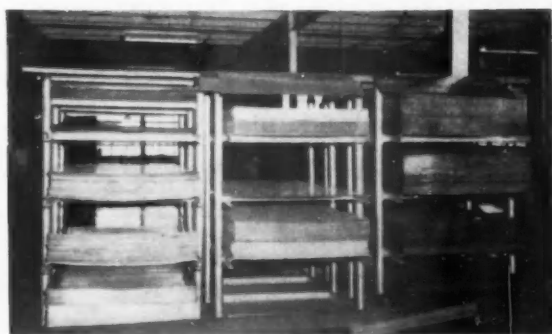
The shop is divided into five general areas: work



MONEL ELBOW is welded at a bench which provides a convenient level for the operation. Special bench designs of this type reduce employee fatigue



MOTORIZED seaming machine cuts down shop noise and speeds the assembly of large ducts. Arthur Schmitt, shop superintendent, is at right



SHEET STORAGE is near truck unloading platform. Bundles of sheets are moved from the trucks to bins by crane and the transfer is completed in a few minutes



LOADING PLATFORM is inside the shop and is designed to make it possible to load or unload conveniently at truck bed level

benches, light machinery, heavy machinery, welding and storage. The work bench area is along the west wall where large windows and fluorescent fixtures provide excellent lighting. Eight benches are located perpendicular to the outside wall.

The northwest section of the shop is the heavy machinery area. Here are located the automatic seamers, power shears, power brakes, dual purpose equipment and slip rolling machines.

Light machinery fills the center area. This equipment includes lockforming machines, shape forming machines, a bar slip former, and light gage brakes and shears.

The welding area is located in the northeast corner of the shop. An over sized exhaust system has been installed to remove all fumes from the welding area. To prevent short circuiting of air to the exhaust system from the remainder of the shop, a metal curtain wall has been dropped around the welding area to within eight ft of the floor. This develops a low air pressure area above the working area causing the fumes to rise rapidly. By providing an eight ft clearance above the floor, it is possible to conveniently move odd shaped parts into the welding area and to move completed assemblies out of the area without the problems that would have been faced if it had been closed off by walls and doors.

The fifth area is for storage of sheet stock and also includes the loading dock. The loading dock is formed by a slanted truck well that drops about four ft below the street level. This truck well is 30 x 30 ft and can handle two large trucks at the same time.

Heavy stock is lifted from the trucks and moved along a monorail track to storage racks. These racks are made of three in. pipes welded to form four level bins. The truck well makes it possible to move finished products from the storage area onto a delivery truck without raising or lowering the products any appreciable distance.

A 22 x 18 ft stockroom is located near the loading dock. Paint, bolts and small parts are kept here in bins attached around the wall and on self-supporting racks located in the center of the room.

The building is heated with two forced air systems. The duct work for each is located along the room beams in the shop, 17 ft above the floor.

The company has provided a 100 x 100 ft parking lot for employees and visitors at the rear of the building.

All in all, the Otten company's investment in its new building shows throughout the results of careful planning. It is proving that adequate working space makes it possible to turn out work faster and easier.



Size Furnace to Handle Makeup Air Loads

Here's an analytical approach to the questions of obtaining sufficient combustion and ventilation air in today's tightly built houses, and calculating furnace capacity and fresh air duct sizes to handle the additional load

GUY A. VOORHEES died November 7. The rough draft of this article, completed just before his death and sent to *American Artisan* by Mrs. Voorhees, represents Guy's last contribution to the warm air heating industry. It culminates 40 years of dedicated activity directed toward constant improvement of the industry. His loss will be sorely felt by *American Artisan* readers and the industry in general, but his contributions remain as a tribute to his memory.

A COMMON BELIEF among heating dealer-contractors is that the volume of outdoor air leaking into a house each hour would equal from one-half to two times the cubic volume of the building. The amount usually mentioned is often "the cubic volume of the house each hour." For houses built 30 or 40 years ago this may have been practically true—houses weren't built as tightly then as they are today. Older houses don't pose too many problems of obtaining sufficient ventilation and combustion air. But even in those days a number of competent heating men insisted on at least one fresh air intake duct to insure ample air for ventilation and for combustion in the gravity circulating warm air systems then installed.

Does Blower Create Pressure Inside House?

With the greatly expanded use of forced air heating, this tendency has increased in some areas, often with the explanation that the blower will build up air pressure inside the house, reducing the volume of outdoor air which would normally enter by infiltration through cracks around windows and outside doors. That explanation is not completely true, as has been proved by tests conducted in the research residences at the University of Illinois.

Design Conditions Usually Aren't Simultaneous

For years 15 mph was the commonly accepted design wind velocity. For a problem house which we considered

FRESH AIR DUCT (arrow) to provide air for ventilation and combustion is sized according to type of house construction, fuel burner requirements and exhaust fan capacity



in previous "classroom" articles, the heat losses were figured for an outdoor design air temperature of -5°F . But any dealer-contractor operating in such an area can find by calling a weather bureau office that an outdoor temperature of -5°F and a 15 mph wind velocity are not likely to occur at the same time. He will find that with the -5°F temperature, it's quite common for the wind velocity to be 5 mph, or less. Under these conditions and in a modern, well constructed house, there will not be enough air infiltrating for proper combustion and elimination of the normal accumulation of odors and moisture.

Table Recommends Combustion Air Volume

And how much air is needed for combustion? Volume will depend on the rate at which the fuel burns, and this of course depends on: 1) the total calculated heat loss of the building, and 2) the type of fuel. In the Purdue University engineering extension department Bulletin 82, "Excessive Moisture in Homes" by Professors W. T. Miller and Frederick B. Morse, the following air volumes are recommended for proper combustion of fuel:

Fuel	Cu ft of air
1 gal of fuel oil	3080
1 lb of coal	310
1 cu ft of natural gas	30

In another Purdue publication, the same authors suggest that the volume of combustion air be calculated at 22 cu ft per hr for each 1000 Btuh heat loss estimated for a building. This suggestion assumes that 60 percent of the heat content of the fuel burned would be usefully applied in offsetting the calculated heat loss of the building. The formula which they recommend could be slightly revised to read as follows:

$$\text{Combustion air (cfm)} = \text{heat loss of house (Mbh)} \times (1/0.6) \times (1/60) \times 22$$

in which

heat loss of house (Mbh) = calculated heat loss of house in Btuh divided by 1000; 0.6 = efficiency of system expressed as a decimal; 60 = minutes per hour; 22 = cubic ft of air for combustion based on 1 Mbh of house.

Notice that the last three terms of this formula can be condensed into 0.61, and the formula can be rewritten as follows:

$$\text{Combustion air (cfm)} = \text{Heat loss of house (Mbh)} \times 0.61$$

Need 43 Cfm for Combustion

For a sample problem house (see May 1958 American Artisan) assume that the total heat loss for the basement and first floor is 70,168. Thus: $70 \times 0.61 = 43$ cfm required for fuel combustion alone.

To determine the infiltration for the sample problem house, assume the wind normally blows against the side of the building where the two bedrooms and bath are located. Since this is an old house, the calculated heat loss due to infiltration (March 1958 American Artisan) assumed that all first story windows are poorly fitted but have storm sash. Each window will have an air leakage rate of 34 cu ft of air per hr per running ft of window crack. These three windows have a total of 50 running ft of crack so the total leakage amounts to $50 \times 34 = 1700$ cfh, or 28 cfm, for the first story rooms.

Equal Volume of Air Escapes

The total air leakage into the fully heated 36×28 ft basement amounts to 88 cu ft of air per running ft of crack (ASHAE table). Since there are 54 running ft of

TABLE 1 — ROUND DUCT and additional furnace capacities are selected according to makeup air quantities required under various outdoor temperature conditions, on the basis of cubic content of the building and load created by the outside air brought in

1	2	3	4
Fresh air intake duct size (in. dia.)	Cfm in 100 equivalent ft of duct at 0.05 in. w.g. suction pressure	Cfh introduced from outdoors	Cubic content of building if return system is designed for 0.05 in. w.g. suction pressure
5	44	2,640	5,280
6	71	4,260	8,520
7	110	6,600	13,200
8	162	9,720	19,440
9	218	13,080	26,160
10	292	17,520	35,040
11	375	22,500	45,000
12	475	28,500	57,000
13	583	34,980	69,960
14	707	42,420	84,840

basement window crack in our problem house, the total leakage would be 54×88 , or 4752 cfh. But this assumes full leakage through each foot of crack. NWAHACA Manual 3 tells us that for a single, undivided room, the air leakage at any given time will be: *a*) the leakage through the crack in any one wall or *b*) one-half the total leakage of the room, whichever is greater. For this particular room, it would be one-half the total, which is 2376 cfh or 40 cfm. This 40 cfm from the basement plus the 28 cfm from the first floor equals a total of 68 cfm of infiltrated air. It must be remembered that for every cu ft of air that infiltrates into a building an equal amount of air leaves the building, via the chimney or through windows and doors on the lee side of the building.

Fresh Air Must Reach Furnace

This would give us an ample volume of outdoor air (68 cfm) to support combustion, *provided enough of it finds its way to the furnace*. Several rules have been suggested and used. One such rule, for a furnace located in a tightly-closed closet in a basementless house, is to bring in a fresh air duct the size of the furnace smoke or vent pipe and place it so it will discharge its air near the floor and close to the burner. This air may be taken from the attic or through an outside air duct extending through the foundation. (In regions where heavy snow may be expected during the coldest weather, this opening should be high enough above the ground for air to enter freely.)

Air Drawn Out on Lee Side

Remember that the wind creates low pressure areas on the lee side of the house and air tends to flow out through window and door cracks on that side. If our furnace has a gun type oil burner with a fan to draw combustion air in and mix it with the atomized fuel, chances are the

fuel will get enough combustion air to burn completely. But if the furnace has a gravity feed oil burner without such an induced draft fan or if the furnace is gas-fired, some question might well arise whether or not the flame would get enough air for complete combustion. Again, remember we assume a wind velocity of 15 mph when the outdoor air temperature is -5°F , which, as previously pointed out, is not likely to happen very often.

Infiltration Data Incomplete

Now let's turn to other conditions under which the volume of air entering by infiltration becomes less because wind velocity is less than 15 mph which is commonly assumed in figuring infiltration heat losses. Heat loss data in NWAHACA Manual 3 is based directly on published recommendations of the American Society of Heating and Air-Conditioning Engineers, but the society does not give infiltration data for most windows and outside doors.

In preparing the design data for Manual 3 the committee had to decide how to list the rate of infiltration for windows and doors with storm sash and storm doors. At the committee meetings where this problem was discussed, the members decided that Manual 3 would not be too far off if it listed the same rate of infiltration through windows and doors with storm sash and storm doors as that shown through weatherstripped windows and doors. This problem was considered at many meetings, over several years—and it's still being discussed.

Weatherstripping Is Skilled Trade

Some manufacturers of weatherstripping object to this assumption. They insist that a window with both weatherstripping and storm sash will allow less outdoor air to enter than a window having either one or the other, but

5												
Design Temperature Difference, deg F												
30	35	40	45	50	55	60	65	70	75	80	85	90
Add Following to Calculated Bonnet Capacity of Furnace (Btuh)												
1,426	1,663	1,901	2,138	2,376	2,614	2,851	3,089	3,326	3,564	3,802	4,039	4,277
2,306	2,691	3,075	3,460	3,844	4,228	4,613	4,997	5,382	5,766	6,150	6,535	6,919
3,661	4,271	4,882	5,492	6,102	6,712	7,322	7,933	8,543	9,153	9,763	10,373	10,984
5,249	6,124	6,998	7,873	8,748	9,623	10,498	11,372	12,247	13,122	13,997	14,872	15,746
7,063	8,240	9,418	10,595	11,772	12,949	14,126	15,304	16,481	17,658	18,835	20,012	21,190
9,461	11,038	12,614	14,191	15,768	17,345	18,922	20,498	22,075	23,652	25,229	26,806	28,382
12,150	14,175	16,200	18,225	20,250	22,275	24,300	26,325	28,350	30,375	32,400	34,425	36,450
15,390	17,955	20,520	23,085	25,650	28,215	30,780	33,345	35,910	38,475	41,040	43,605	46,170
18,889	22,037	25,186	28,334	31,482	34,630	37,778	40,927	44,075	47,223	50,371	53,519	56,668
22,907	26,725	30,542	34,360	38,178	41,996	45,814	49,631	53,449	57,267	61,085	64,903	68,720

not both. They also aver that installation of weatherstripping is a skilled trade in itself, which cannot be performed properly by anyone who is not experienced in that work. In figuring the heat loss of a new house, the heating man can learn whether or not weatherstripping will be used. But he seldom knows its quality and usually he doesn't know whether or not it will be installed by a professional weatherstripping installer, by some carpenter, or by the home owner himself.

Outside Factors Affect Leakage

Tables published in the ASHAE Guide (1958) show that for a wind velocity of 5 mph, the air leakage drops to 6 cfm per ft of crack through windows such as those on the first floor of the house we have been considering in our problems. This is a total of only $50 \times 6 = 300$ cfm. For the basement windows, suppose the air leakage drops from 88 cfm down to 20 cfm per ft of crack (with a 5 mph wind factor). Total leakage into the basement will drop from 2376 cfm to one-half of 54×20 , or 540 cfm. Total infiltration (first floor and basement) amounts to 300 cfm plus 548 cfm, which is 848 cfm or 14 cfm—not nearly enough to provide the required 43 cfm of air needed for combustion.

In many northern regions of the United States and the colder parts of Canada, infiltration through basement windows often almost disappears because snow banks up around the house and blocks off nearly all basement openings.

Kitchen Fan, Dryer Add Periodic Loads

Suppose the house also has a ventilating fan in the kitchen and a vented clothes dryer, each of which re-

moves 200 cfm of air from the house. Then it would be necessary to provide 400 cfm for ventilation plus 43 cfm for combustion, or 443 cfm of fresh air during a specific period.

Table Shows Valuable Design Data

Table 1 shows the capacities that round ducts ranging from 5 to 14 in. in diameter could be expected to provide at a water gage pressure of 0.05 in. per 100 ft. The capacity is also shown in cfm and cfh of outside air for each duct size. Table 1 also recommends the round duct sizes required to provide makeup air to the return air system, based on the cubic content of the building and the additional Btuh required to heat this air based on design temperature differences ranging from 30 to 90 deg.

If the engineer decided he must provide a makeup air volume of 468 cfm, a 12 in. round duct attached to the return air system would be required. The additional furnace capacity that would be necessary to handle this air volume under the 75 deg design condition would be 38,475 Btuh. Thus, the furnace capacity would necessarily be based on 108,643 Btuh instead of the original 70,168 Btuh. This is a 55 percent increase over the original design conditions. However, the kitchen fan and the laundry dryer probably won't be operating at the same time very often.

Thus, if 200 cfm is provided to meet maximum ventilation requirements and 43 cfm is admitted for combustion, the total outside air volume needed would be 243 cfm.

Table 1 shows that a 10 in. round duct can be used to supply the necessary makeup air. This will result in an additional 23,652 Btuh furnace capacity or a furnace rated to provide 93,820 Btuh output.

Two Extended Plenums, Outdoor Control Keep Test House Temperatures Even

. . . in a three-story house with a supplementary heating system for the upper floors. NWAHACA findings in first floor and basement show what can be expected from a well-designed and installed extended plenum system

DEVELOPMENT OF AIR distribution systems to provide better temperature distribution between floor and ceiling of a room and between rooms is the consistent objective of industry engineers and the National Warm Air Heating and Air Conditioning Association. To obtain reliable data on the use of small diameter duct systems in cold climates and the extent bypass and zone control systems have in reaching the objectives, the field investigation committee of NWAHACA tested six such

installations. The committee's findings are summarized here.

Two Types of Heating

The fourth house tested is a large, three-story residence with a basement. It is heated by a rather distinctive arrangement: a hot water system for the second and third floors and a forced warm air system for the first floor and basement.

Design heat loss for the rooms on the 1504 sq ft first floor is 63,140

Btuh (42 Btuh per sq ft), and for the basement, 20,197 Btuh, for a total heat loss of 83,337 Btuh for the area heated by the warm air furnace. (The design heat loss for the second and third floors was not determined because this area was not tested.) The heat loss is low from the first floor because no heat is lost through the ceiling. The design temperature for the area is -20 F and degree days number about 3000 per year.

No Return Intakes

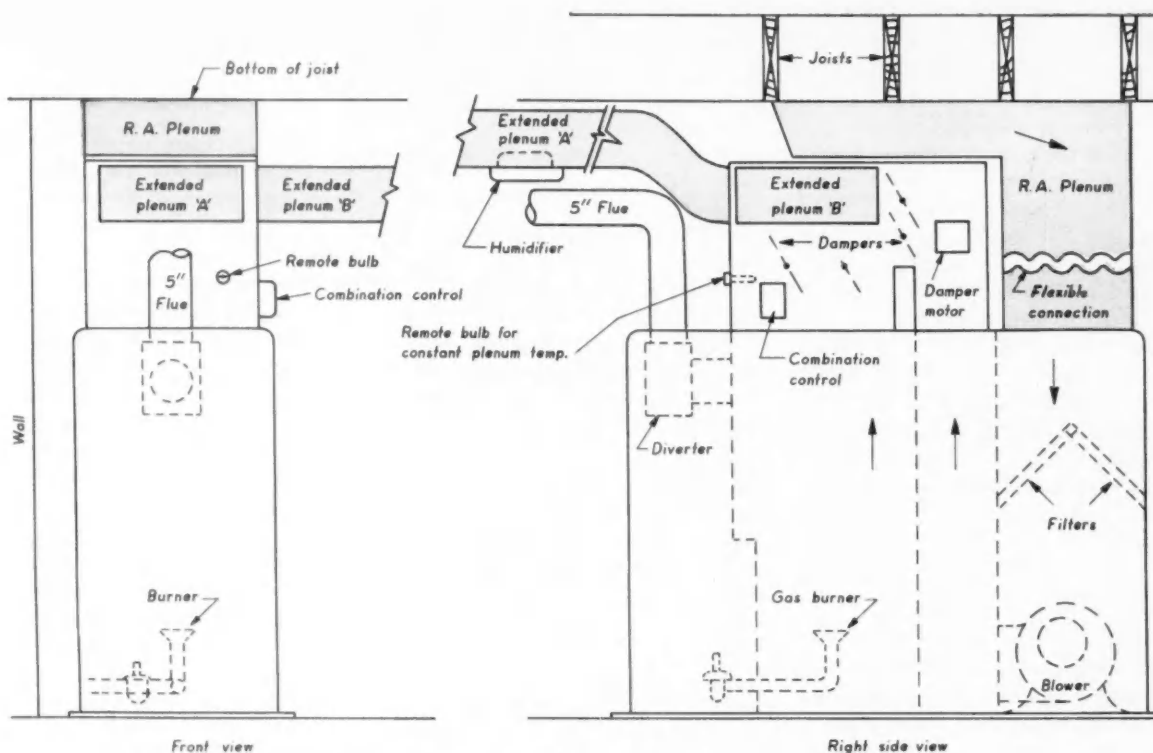
This forced warm air extended plenum system is well designed and installed. Fifteen warm air diffusers are spaced at an average of 11.3 ft along 170 ft of exposed wall. All first floor registers are in the floor beneath windows. The first floor has no return air intakes. Return air flows down the basement steps from the hall and enters the return side of the furnace through an opening in the plastered ceiling. Return air from the basement enters through the same opening. The owner said this arrangement was to be improved. The furnace has a return air bypass and a set of face and bypass dampers which permits return air from the blower to bypass the furnace heat exchanger on demand of the control system.

TEST CONDITIONS

HOUSE: Three floors with basement, constructed in 1929 for \$25,000, including land. Outside walls are 1 in. stucco on 1 in. sheathing and building paper attached to wood studs with 1/2 in. glass fiber between studs. Inside wall and ceiling surfaces are wood lath and plaster. First floor windows are wood sash, somewhat loose. All windows have storm sash. Outside entrances have storm doors and weatherstripping.

WEATHER: Relatively constant during five-day survey January 3-7, 1955. Outdoor air temperatures ranged from 9 to 27 F: warmer temperatures recorded at the beginning and end of the test period and colder weather during the middle. Most room data was collected during daylight hours January 5 when temperatures ranged from 18 F at 8 a.m. to 23 F at noon and 19 F at 5 p.m.

OCCUPANTS: The house was occupied by six people: two children between 6 and 12 years old, two teen agers and two middle-aged adults. They expressed complete satisfaction with the forced warm air heating system and considered that it gave more even heat and better temperatures than any heating system they had previously lived with.



1 TWO EXTENDED PLENUMS (20 × 8 in., 68 and 38 ft) from 120,000 Btuh gas-fired furnace supply fifteen 4 in. round branches upstairs and three to the basement. Bypass section allows return air to pass through furnace without contacting heat exchanger. Face and bypass dampers at top permit variation of air quantity through bypass and heat exchanger sections in response to controls

The gas-fired, lowboy furnace is rated at 120,000 Btuh input, 96,000 Btuh output. It has three sections: 1) the return air section containing two filters and a blower with an 11 in. wheel, belt driven by a 1/4 hp motor; 2) a bypass section which permits the blower to pass return air through the furnace without passing through the heat exchanger; and 3) the gas-fired heat exchanger and combustion chamber section. Face and bypass dampers, installed at the top of the furnace over the bypass and heat exchanger sections, permit variation of the air quantity moving through each of these two sections as dictated by the control system.

Two Extended Plenums

The duct system consists of two 20 × 8 in. extended plenums, 68 ft and 38 ft long. To these are attached fifteen 4 in. round ducts leading to 2 1/4 × 14 in. floor perimeter dif-

TABLE 1 — AIR TEMPERATURE DIFFERENTIALS (deg F) between and within first floor rooms were low when outdoor temperature was 20 F and the thermostat setting was 76 F. Sun intensity was about 50 percent of maximum and a gentle wind was blowing

First floor Rooms	Living Room	Sun Parlor	Dining Room	Pantry-Kitchen	Hall & Entry	Library	Average
3 in. below ceiling	74.1	75.0	76.7	75.5	76.6	76.2	75.6
30 in. level	73.8	74.3	74.3	74.7	75.6	75.3	74.6
3 in. above floor	69.1	72.7	73.8	73.9	73.5	73.0	72.6
Differentials between levels							
Ceiling-floor	5.0	2.3	2.9	1.6	3.1	3.2	3.0
30 in. level-floor	4.7	1.6	0.5	0.8	2.1	2.3	2.0
Floor surface	71.7	73.2	73.8	76.0	74.0	73.3	73.6
Floor air to floor surface	-2.6	-0.5	0.0	-2.1	-0.5	-0.3	-1.0

TABLE 2 — BASEMENT ROOM TEMPERATURE differentials (deg F) were high from ceiling to floor, not so great between rooms when outdoor temperature was 14 F and the thermostat setting was 76 F. Sun intensity was 100 percent and wind velocity was 10 mph

Basement Rooms	Recreation Room, North	Recreation Room, South	Hall & Workroom	Laundry	Average
3 in. below ceiling	82.6	81.3	77.3	80.8	80.5
30 in. level	71.1	71.2	70.9	69.8	70.3
3 in. above floor	68.0	67.4	67.8	67.6	67.7
Differentials between levels					
Ceiling-floor	14.6	13.9	9.5	13.2	12.8
30 in. level-floor	3.1	3.8	3.1	2.2	2.6
Floor surface	69.3	68.0	69.3	67.6	68.5
Floor air to floor surface	-1.3	-0.6	-1.5	0	-0.8

fusers on the first story. There are three $2\frac{1}{4} \times 14$ in. high side wall diffusers in the basement recreation room, and one 6 in. round diffuser in the basement workshop ceiling.

While the areas of the house heated by the hot water and the warm air systems are basically separated, there is some overlapping. There are three hot water radiators on the first floor, one in each of two entrance hallways and the third in a half bath on the first floor. Another is in the basement wall between a fruit storage room and the recreation room. The radiators are all controlled by a room thermostat on the second floor. An unvented clothes dryer was noted in the basement.

Occupants Are Satisfied

The occupants justified leaving the clothes drier unvented in the basement with the statement that the discharge of moist air from the drier into the basement seemed to relieve the problem of insufficient humidity in the house.

Dampers Temper Air

The room thermostat positions the face and bypass dampers to mix heated and recirculated air to produce a variable discharge temperature according to the heat losses of the house. The damper actuator has a switch which shuts off the burner when the damper over the heat exchanger compartment reaches a predetermined "closed" position.

Maintain CAC

Air flows constantly through the ducts and registers but its temperature is varied by mixing recirculated and heated air in the furnace supply plenum. The mixing dampers usually remain in about the middle position, passing equal quantities of recirculated and heated air since the bonnet temperature is increased with the severity of the weather.

The total cost of the heating system to the home owner, installed, was as follows:

Control System Is Unusual

The unconventional system for this face and bypass damper heating system consists of the following:

Room thermostat — Setting: 76 F, differential: 0.85 deg. (It controls the damper motor that actuates the face and bypass dampers on the furnace.)

Damper motor — A modulating type damper actuator, controlled by the room thermostat, which operates the face and bypass dampers.

Outside air thermostat — Commands the operation of the gas burner. It has two remote temperature sensitive bulbs: one outdoors to measure the outdoor air temperature, the other in the heat exchanger section of the furnace close to the limit control, where it measures the warm air plenum temperatures on the furnace side of the face and bypass dampers. The control has a "reset ratio" function which increases the bonnet temperature control setting one deg for every one deg drop in outdoor temperature. It maintains a constant bonnet temperature at the level determined by the outdoor temperature. The scale setting starts at 105 F.

Fan switch settings — "On" at 115 F, "off" at 95 F.

Limit control setting — "Off" at 200 F.

Combustion control — Equipped with conventional gas valve and automatic pilot.

Cost of air distribution system	\$ 700
Cost of building changes to accommodate the new heating system	300
Cost of furnace and controls	1000
	<hr/>
	\$2000

Table 1 summarizes recorded first floor room air temperatures and temperature differentials recorded

when the outside air was 20 F and the thermostat setting was 76 F.

Temperature Balance Is Good

Room-to-room temperature balance is good; the minimum was 73.8 F in the living room and the maximum was 75.6 F in the hall. The range of room air temperature during a burner cycle was about 1.0 deg.

The 3.0 deg temperature differential from ceiling to floor amounts to 0.54 deg for each 10 deg change in indoor-outdoor temperature difference. The 2.0 deg temperature differential from 30 in. level to floor amounted to 0.36 deg for each 10 deg change in indoor-outdoor temperature difference, which is low.

Table 2 summarizes recorded basement room temperatures and temperature differentials recorded when outside air was 14 F and the thermostat setting was 76 F.

Basement Ceilings Warm

The floor surface in the centers of the basement rooms was warmer than the floor air, largely because the basement air temperature at the ceiling level was about 80.5 F. The warmer air heated the basement ceiling and in so doing created a radiant panel. This panel radiated heat to the floor, raising its temperature. The temperature differential from floor to 30 in. level was only 2.6 deg, but a much larger differential existed between ceiling and floor. Undoubtedly, high temperatures at the basement ceiling had a favorable effect on the first story floor surfaces.

Drops 10 Deg in Duct

Air temperatures at the living room registers were about 10 deg lower than those from the closer runs. This temperature drop was anticipated in the 68 ft trunk duct which serves the living room. Other register discharge air temperatures between 100 F and 112 F were recorded, the majority less than 106 F. This is a small spread for register air temperatures considering that the outdoor temperature was 20 F. The

blower was operating continuously during the test day.

Velocities Are Low

Register air velocities are low, as has been noted in many other small duct systems. Velocities are never greater than 210 fpm at the register face. Air flow rates are also low, ranging from 12 to 29 cfm.

Air flow rates from remote registers were comparatively large. This also is to be expected from extended plenum duct systems.

The estimated total flow rate of 421 cfm from the warm air registers is lower than that measured at the return air intake. The flow rate calculated from the furnace heat balance is about 552 cfm and this value was accepted as the most reliable for this system. The rate of air recirculation, based on 552 cfm, amounted to only 2.4 recirculations per hour. This value is also consistent with low rates observed in other small duct systems.

Extended Plenum Oversized

The total static pressure of 0.10 in. W. G. recorded for the duct system is extremely low. An inspection of the dual extended plenum shows that 320 sq in. (2.22 sq ft) of duct handles 552 cfm or about 250 fpm velocity at the maximum point. The size of the extended plenum could have been reduced considerably. The heat loss from the ducts is too high, which probably accounts for the high ceiling air temperature in the basement.

The blower operated continuously when the outdoor temperature was 21 F. The blower did not operate intermittently during the entire week and the maximum outdoor air temperature for the period was about 30 F. Apparently, the controls are close to Continuous Air Circulation settings.

FIELD TESTS SEEK SUGGESTIONS FOR IMPROVED HEATING PRACTICES

The National Warm Air Heating and Air Conditioning Association maintains a mobile laboratory which moves into an area and surveys heating and cooling equipment installed in residences. No effort is made to alter any of the conditions found. Data is secured by the mobile laboratory technician and turned over to the

Engineering Advisory Council for evaluation. This series of articles summarizes reports on six extended plenum heating systems, four with face and bypass damper arrangements to shunt air around the furnace heat exchanger, and two that use zone control. Small diameter ducts are used as feeders in all six jobs.

The burner operated 32.2 percent of the time when the outdoor temperature was 21 F. Extrapolation of data to design temperature conditions indicated more-than-ample reserve capacity of about 37 percent. The three percent CO₂ content is too low for good efficiency.

The steady register air temperatures are maintained by constant blower operation and frequent short operations of the burner.

Warm air plenum temperatures reached an average maximum of 140 F and 129 F when outdoor temperatures were 10 F and 20 F, respectively. This is an increase of 11 deg in the plenum for 10 deg decrease outside, which apparently is enough to maintain satisfactory indoor temperatures.

Outdoor Control Does Good Job

Register air temperatures on the 10 F day averaged about 8 deg higher than on the 20 F day, which is the result of controlling bonnet temperatures with the outdoor thermostat. Apparently, although outdoor

temperature variation was limited during this test period, the regulation of bonnet temperatures by an outside control is sufficient to maintain satisfactory temperatures in the house.

The scale setting on the control indicated the bonnet temperature would be maintained at 105 F when the outdoor temperature was 70 F. With a one-to-one ratio the plenum temperature would be maintained at 165 F when the outdoor temperature was 10 F, and 155 F when the outdoor temperature was 20 F. This variation is evident in the measured warm air plenum temperatures.

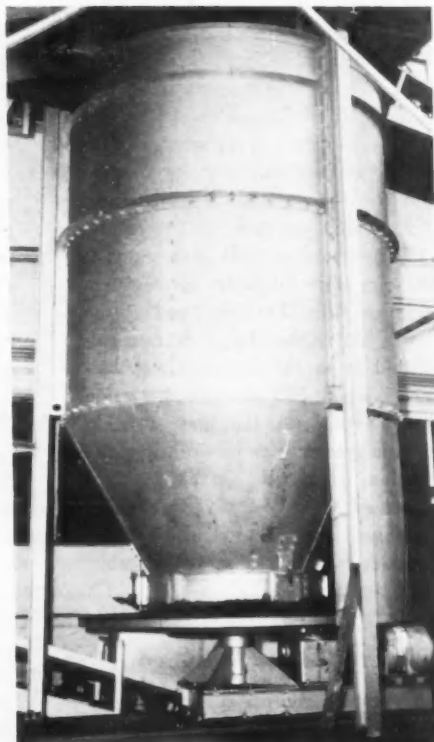
The burner cycled 8 times an hour and the length of each cycle increased with colder weather. With an outdoor temperature of 10 F the total "on" time of the burner was 32.7 minutes during an hour, or 54.5 percent of the time. During an hour when the outside temperature was 20 F the total "on" time was 19.2 minutes or 32.2 percent of the time. During both days the average swing in bonnet air temperature was 23 deg which accounts for the small variations in register air temperatures.

THIS IS THE FOURTH in a series of six articles on extended plenum, small duct heating systems using zone control or bypass arrangements

Sheet Metal Plays Pioneer Role



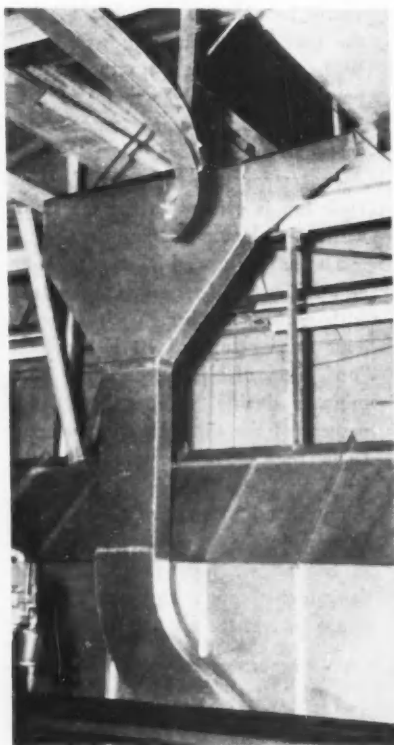
INSULATED "HOUSE" fabricated from 12 ga removable panels is used to separate mold from casting and to break up the mold so sand can be cleaned



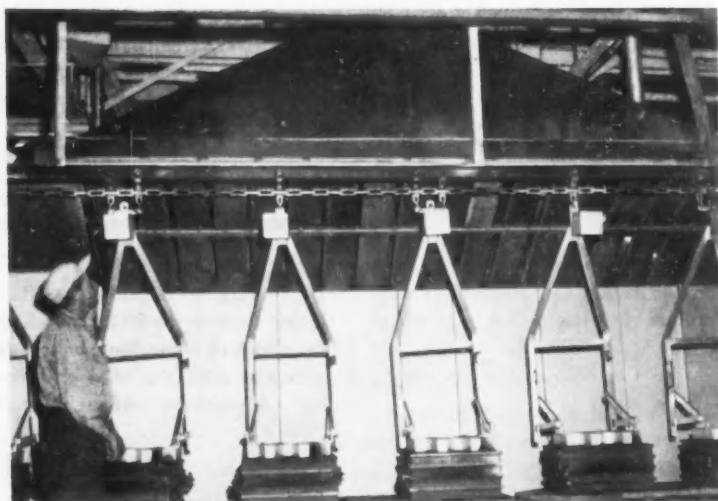
SAND MULLER cleans used sand in operation similar to that of cyclone dust collector. Muller is fabricated from 3/16 in. bolted plates



**Sand is cleaned and
re-used to make
new molds for automatic
casting line**



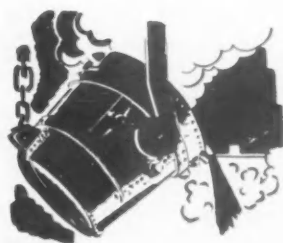
HOPPER AND CHUTE feed clean sand to automatic molding machine



MOLDED SAND MOVES to pouring station where fumes and heat are handled by two 10 ga, 11½ × 14 ft hoods. Louvers are removable for cleaning

in First Automatic Casting Line

Foundry calls on the skill of a sheet metal contractor to provide housings, pans, hoppers and other vital components needed in a continuous automatic casting assembly line, said to be the first of its kind in operation

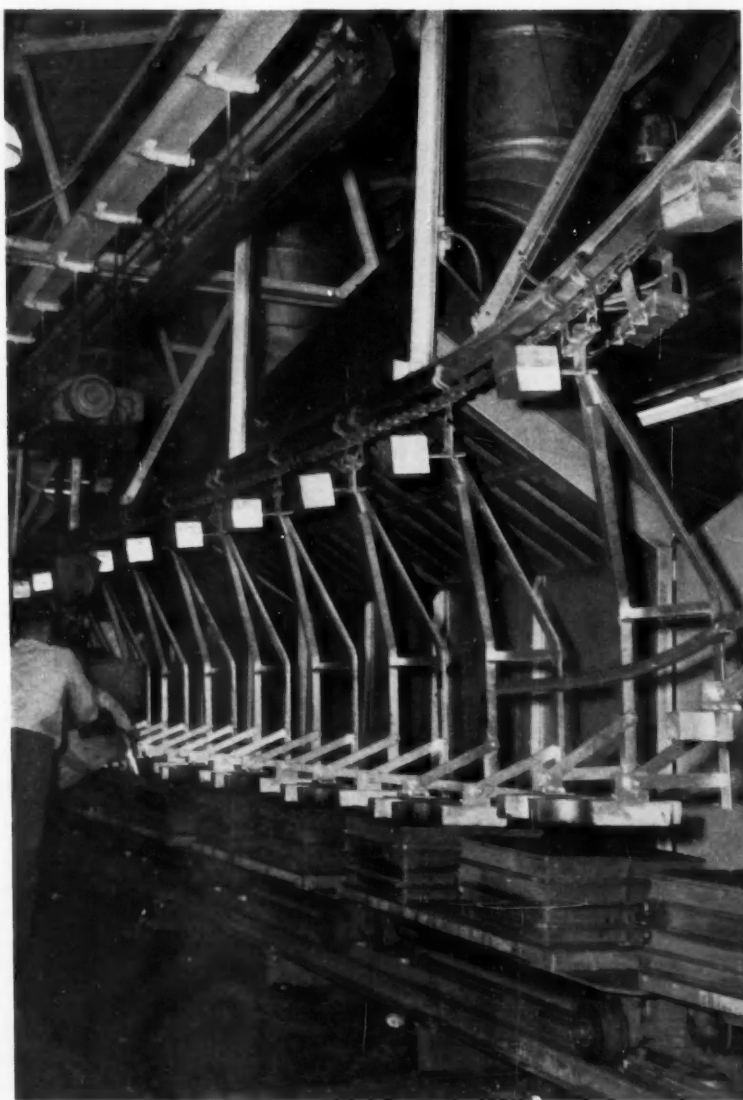


EVIDENCE OF THE sheet metal contractor's importance to the progress of American industry is the part he plays in modification of most existing manufacturing techniques. Preston Jones, Reedsville Sheet Metal Company, Reedsville, Wis., for one, played a leading role in development of the country's first continuous automatic casting assembly line for a foundry.

Fourteen tons of sheet metal ducts, hoods, housings, pans, etc. were used for this foundry system.

Entire Process Automatic

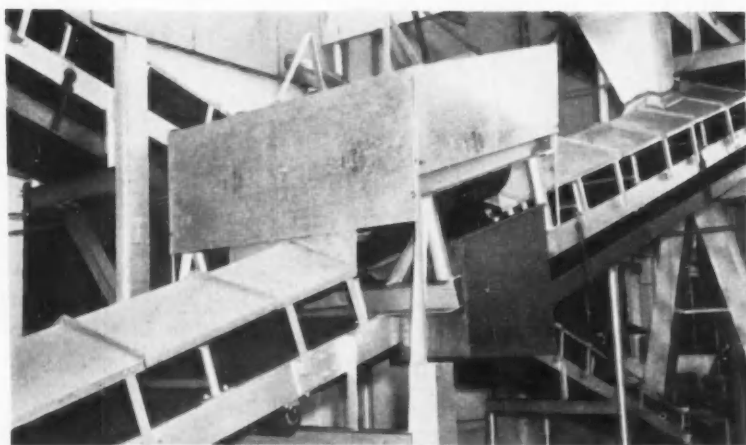
Casting equipment was set up to automatically and continuously mold green (clean) sand in two separate molds (one top and one bottom mold), place one mold on top of the other and transport them to a pouring station, cool the mold and casting, separate the casting from the mold, break up the mold, deliver the sand to a cleaning chamber and move the clean sand to hoppers at the mold forming machines. This system was designed for fast produc-



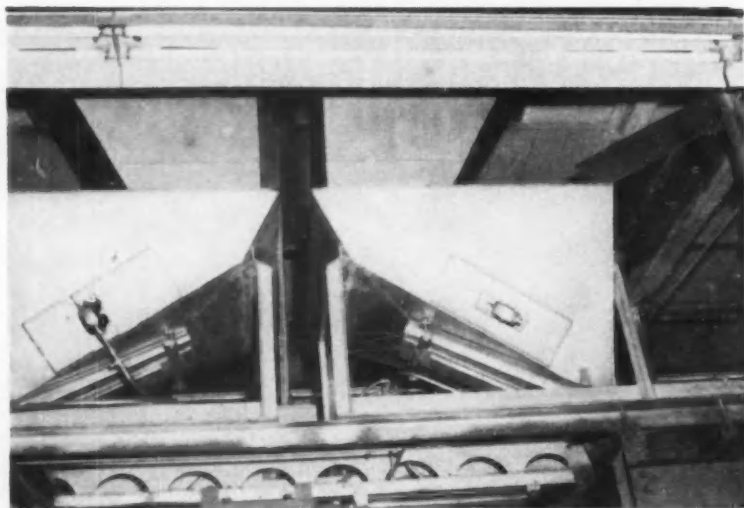
POURING STATION ON CASTING ASSEMBLY LINE is capable of producing two 25 lb castings per minute



ROOF FOR CONVEYOR BELTS consists of peaked panels held together by loosely fitting standing seams. Wire clips hold panels in position on roof frame



SHEET METAL HOUSING covers magnet which removes iron particles from sand being delivered to the cleaning muller



TWO 10 GA HOPPERS located near building ceiling feed cleaned sand to mold forming machines

tion of castings. Two 25 lb, 12 × 12 in. plates with 4 in. lugs on each side are cast each minute, 24 hours a day.

Green sand feeds into two 10 ga hoppers above the automatic mold casting machines. The hoppers are reinforced by $\frac{3}{8} \times 3 \times 3$ in. angle iron.

Blowers Exhaust Heat, Fumes

Nine blowers of various capacities remove heat from the assembly line area. Each 36 in. diameter blower produces a velocity of approximately 6000 fpm through round ducts connected to hoods above the pouring station. This exhaust system removes both hot air and fumes from the pouring station.

Louvers Regulate Air Quantity

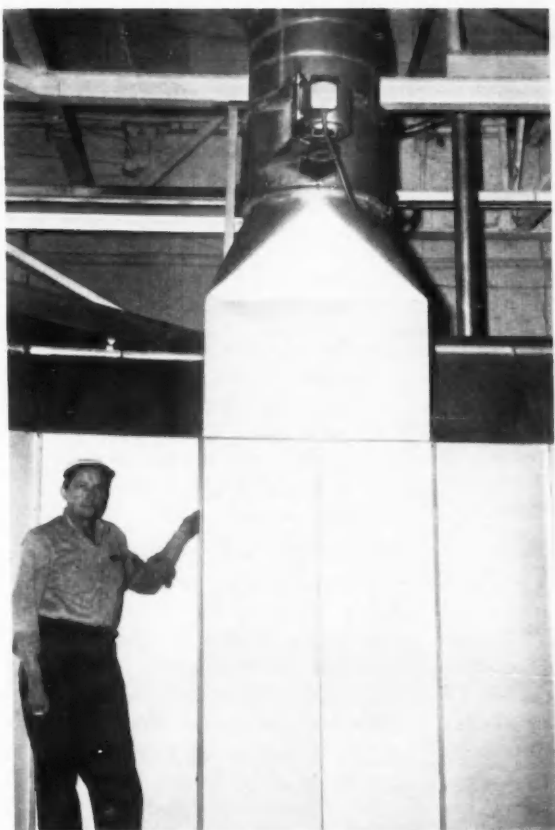
Each hood, fabricated from 10 ga sheet metal, is $11\frac{1}{2} \times 4$ ft. Adjustable 16 ga sheet metal louvers on the hood provide whatever air quantity is required for various pouring operations. Each louver is removable for cleaning.

As the casting leaves the pouring station it enters a tunnel fabricated from sheet metal panels clipped together for quick removal. Because of the necessity for frequent cleaning in foundry work, all duct work and sheet metal housings had to be made with ease of separation in mind.

Insulation Cuts Radiation

The 4 ft wide panels for the conveyor enclosure are two separate pans fastened together in the middle with a standing seam button punched every 12 in. These panels are held in position by a T bar frame, the cross bar of which supports the panels. The panels are joined to each other and to the T frame by a wire clip fastened through the turned edge of the panels. One inch insulation cuts down heat radiation to the assembly line area.

As the casting and the mold progress around the conveyor, exhaust fans remove air from the paneled enclosure to cure the casting.



HEAT IS REMOVED from enclosed conveyor system by nine exhaust fans similar to this one. Rate of heat removal regulates the curing process for the casting



CONVEYOR ENCLOSURE PANELS are 4 ft wide, insulated to reduce heat radiation. All panels are removable for on-the-spot cleaning—very important in foundry work

"We enjoy doing this type of work because it gives us an opportunity to use the skills we have learned as sheet metal men and allows us to participate in the advances our customers are making"

The completely-cured casting finally enters an insulated enclosure 5 ft wide, 14 ft long and 6 ft high fabricated from sheet metal panels similar to those on the conveyor housing. Panels are 12 ga galvanized sheets joined together with bolts and wing nuts to facilitate disassembly. This "house" is also insulated and ventilated to prevent transmission of heat to the production area. Here the mold is separated from the casting. The sand is conveyed to a sand muller (similar to a cyclone dust collector) where it is filtered and cleaned for re-use. The sand muller is fabricated from 3/16 in. plate bolted together so individual sections can be replaced without completely disassembling the entire muller.

On its way to the muller the sand

passes over an electro-magnet which removes iron particles left from the pouring operation.

Because this magnet must be cleaned periodically, it is protected by a sheet metal box with a hinged cover. Brackets on top of the box prevent the heavy cover from falling against the box top while the magnet is being cleaned. In its normal position, the cover is held in place by bolts and wing nuts.

Pan Catches Overflow

To prevent the sand which sifts off the conveyor on its way to the muller from being lost or accumulating in troublesome piles, a sheet metal pan was installed under the conveyor belts, held in position by

clips similar to those on the casting conveyor enclosure housing. The conveyor is protected from weather by a peaked roof, also held together by clips and joined by a loosely-fitting standing seam which permits easy removal of panels for working on the conveyor and periodically cleaning beneath it.

Conveyor roof panels are held in place by $\frac{1}{4} \times 2$ in. T bars.

"Problems like this make our work interesting," says Preston Jones, who fabricated and installed this system. "We enjoy doing this type of work because it gives us an opportunity to use the skills we have learned as sheet metal men and allows us to participate in the advances our customers are making because of their production techniques."

HUGH REID'S SHEET METAL PATTERN

How to Lay Out a Tool Box Pattern

Here's a sheet metal product that virtually everyone in the trade will have occasion to make — and here's the simplified method of laying one out

ONE OF THE FIRST fabrication projects undertaken by most apprentices to the sheet metal trade is a tool box for their own personal use. The box developed in the pattern layout problem for this month is 16 gage galvanized iron. Box dimensions are 18 in. long, 7 in. wide. The box section is 7 in. high with a $3\frac{1}{2}$ in. angled cover section. The cover has a 1 in. straight flange. It is held closed by a spring. A chain can be used to hold the cover open at an angle greater than 90 deg.

Using the simplified method, which eliminates the plan and front view drawings and substitutes the short method drawing, layout time for this complete project should not exceed 30 minutes.

Given the plan and front views of a tool box, the following is a step-by step-analysis to the pattern problem solution.

The Box Pattern Fig. 4 —

a) Draw a $3\frac{1}{2}$ by $11\frac{1}{2}$ in. rectangle representing the bottom of the box as shown in Fig. 1, and label the corner points M, C, G and F.

b) Draw perpendicular lines above points M and C, transfer the $11\frac{1}{2}$ in. given height (Fig. 2) to both lines and mark the end points J and K. Draw lines MJ, JK and KC.

c) Draw lines to the left of points

M and F and perpendicular to line MF. Measure the $11\frac{1}{2}$ in. given height on each line to establish points L and E. Draw lines ML, LE and EF. From points F and G draw lines below and perpendicular to line F G. Measure the given $11\frac{1}{2}$ in. and establish points J and K. Draw lines FJ, JK and KG. From points C and G, draw lines to the right, perpendicular to line CG, measure the $11\frac{1}{2}$ in. given height and establish points D and H. Draw lines CD, DH and HG.

Short Method, Fig. 5 —

a) Draw a horizontal line and establish point O. From point O, draw a line perpendicular to the horizontal line. Transfer the $\frac{3}{8}$ in. cover front slant length (Fig. 1) to the left of point O and mark the point R. Transfer the $\frac{1}{2}$ in. given cover side slant dimension from Fig. 1 to the right of point O (Fig. 5) and mark the point S. Transfer the $\frac{3}{4}$ in. dimension of the box cover (Fig. 2) to the vertical line and mark the point N.

Draw lines NR and NS and identify these lines as A and B.

Box Cover Pattern, Fig. 3 —

a) Draw the $21\frac{1}{2} \times \frac{3}{4}$ in. rectangle W X Y Z. Draw extended lines above points W and X, below

points Y and Z. Set a compass at line length B (Fig. 5) and with points W, X, Y and Z as centers, draw arcs to the extended lines. Label each intersection with the letter T. Through points T draw lines parallel to lines WX and YZ.

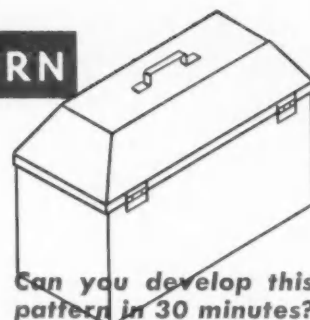
b) Transfer the given $\frac{3}{8}$ in. length from Fig. 5 to the right and left of points T on the horizontal lines and establish the four points P. Draw lines WP, XP, YP and ZP.

c) Extend lines WX and YZ to the right and left. Set a compass at line length A (Fig. 5) and with points W, X, Y and Z as centers transfer this length to the extended lines and mark the points U. Through points U draw lines parallel to lines WY and XZ.

d) Transfer the given $\frac{1}{2}$ in. length from Fig. 5 above and below points U on the parallel lines (Fig. 3) and establish the four points S. Draw the lines XS, ZS, YS and WS.

e) From both sets of lines PP and SS measure the given $\frac{1}{4}$ in. box cover flange length as shown on Fig. 1 to the right and left. Identify these eight points with the letter Q. Draw the two side rectangles QSSQ and the top and bottom rectangles QPPQ.

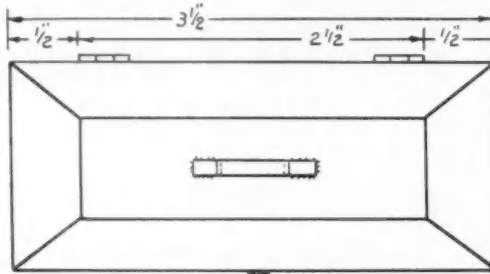
Add allowances for seams and joints and mark the patterns for fabrication.



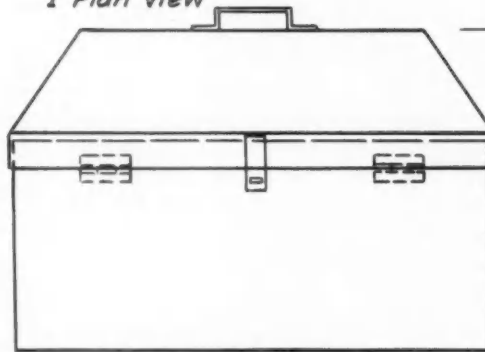
Can you develop this pattern in 30 minutes?

This is a new and accurate approach to the development of sheet metal patterns that will cut costly layout time. The method applied to this month's fitting can be used as a guide to develop related patterns.

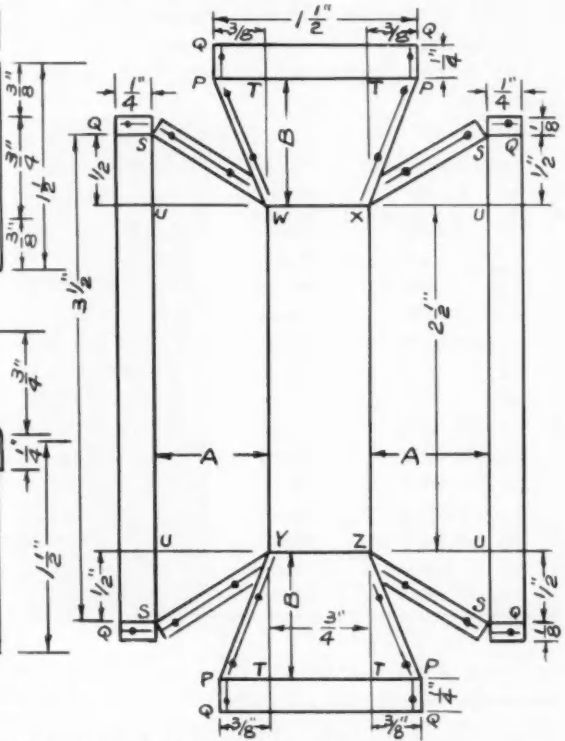
NOTE: THESE PATTERN DIMENSIONS should be multiplied by the predetermined ratio figure to produce the actual size of the fitting needed.



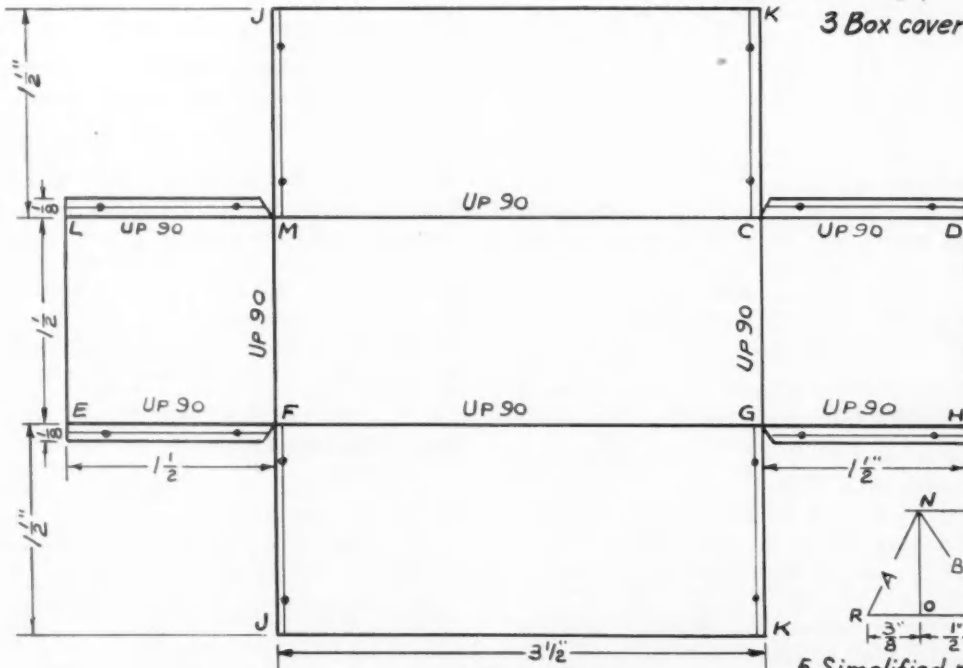
1 Plan view



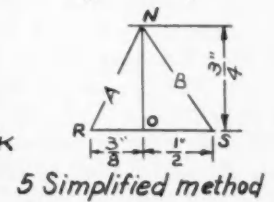
2 Front view



3 Box cover



4 Box pattern



5 Simplified method

TEAR OUT THESE PAGES AND FILE THEM FOR FUTURE REFERENCE

Add Cash Discounts to Your

SAMPLE BREAKDOWN OF SAVINGS for paying cash on each heating and air conditioning equipment order for a year illustrates wisdom of maintaining reserve for this purpose

Amount of invoices paid	Month	Extra profit from cash discount of 2 percent
\$ 2,000	Jan	\$ 40
1,000	Feb	20
3,000	March	60
5,000	April	100
20,000	May	400
25,000	June	500
45,000	July	900
40,000	Aug	800
40,000	Sept	800
14,000	Oct	280
5,000	Nov	100
4,000	Dec	80
\$204,000	Total	\$4080

RECENTLY, A DEALER-CONTRACTOR received a contract for installation of 35 warm air heating systems in a new subdivision. Having ample storage facilities, he ordered all the materials he needed at one time. His wholesaler's salesman, making his weekly call, noticed the statement for this material on his desk.

"I suppose," the salesman said, "you are going to pay cash for all that material, so you'll get the cash discount."

"Cash!" the dealer-contractor exclaimed. "I haven't got that much money."

"Seems to me," the salesman observed, "that you could borrow some money, take the cash discount, and still make a profit on the transaction without any more effort than going to the bank and signing a note."

"You think so?" replied the dealer-contractor. "Let's figure out just what I could save."

Two Percent Adds Up

The salesman pointed out that the cash discount on most of the material was 2 percent if paid in 10 days—not a huge saving on small volume purchases, he noted, but on a big order such as the dealer-contractor's 35-unit purchase, it runs into money that shouldn't be allowed to get away.

Since the discount was more than 2 percent on a few items and less on some, he totaled the discounts for each invoice and informed the dealer-contractor that he could save exactly \$210 by paying cash.

Pursuing the issue from the standpoint of time, they found the work could be scheduled so collections could be made each month, and a bank loan for the full amount

Profit Column

could be repaid within 90 days, beginning at the end of the first month.

The salesman produced three tables (see reproductions on these pages) for the dealer-contractor to use for quick reference in future transactions to determine the additional profit he could make on materials if he used his own cash reserves or borrowed money to pay cash.

Table 1, Profits from Cash Discounts At Different Rates, lists 1, 2, 3 and 4 percent cash discounts in dollars for various amounts, ranging from \$100 to \$10,000. Table 1 shows at a glance, for example, that if the cash discount is 2 percent for payment within 10 days and the statement is \$100, \$2 can be saved; if the statement is \$1000, the saving will be \$20; and so on.

Assuming the original statement was for \$10,500, the table shows that \$200 represents the 2 percent cash discount for \$10,000 and \$10 is the 2 percent cash discount for \$500. Thus, the saving for paying a \$10,500 bill within 10 days amounts to \$210.

Breaks Down Savings

Table 2 shows the savings which can be realized if: 1) the dealer-contractor uses his own money, or 2) he borrows it from a banking institution at 5 percent annual rate and repays it within 30, 60 or 90 days. The amount shown is what the dealer-contractor will save — even if he borrows the money — by taking advantage of the 2 percent, 10 day discount.

Let's assume the dealer-contractor paid the \$10,500 within the 10-day limit with money borrowed at 5 percent per annum. If he failed to repay the full amount until near the end of the 90 day period, he would still have earned \$78.96 by putting borrowed capital to work.

Sample Illustrates Point

This dealer-contractor's annual purchases totaled \$204,000. His monthly invoices are recorded in the left column of the sample monthly breakdown worked out to show the dealer-contractor how much he could have saved by taking advantage of the 2 percent discount.

This yearly record established that an additional clear profit of \$4040 could have been made via the 2 percent discount. While this is theoretical, it illustrates the importance of paying cash according to the discount terms of each statement, even though loans may be necessary occasionally.

Obviously, it's more profitable to take the cash out of

Don't underestimate the value of your supplier's discount for prompt payment of statements for materials—two percent savings on every order looks pretty big when the year's profit is totaled in your books

Statement	1%	2%	3%	4%
\$ 100	\$ 1	\$ 2	\$ 3	\$ 4
200	2	4	6	8
400	4	8	12	16
500	5	10	15	20
800	8	16	24	32
900	9	18	27	36
1,000	10	20	30	40
2,000	20	40	60	80
3,000	30	60	90	120
4,000	40	80	120	160
5,000	50	100	150	200
6,000	60	120	180	240
7,000	70	140	210	280
8,000	80	160	240	320
9,000	90	180	270	360
10,000	100	200	300	400

Statement	If invoice is paid from cash reserve without borrowing	If entire amount is borrowed at 5 percent for 30 days	If entire amount is borrowed at 5 percent for 60 days	If entire amount is borrowed at 5 percent for 90 days
\$ 500	\$ 10	\$7.92	\$5.84	\$3.76
800	16	12.67	9.34	6.01
900	18	15.25	11.50	6.75
1,000	20	15.84	11.68	7.52
2,000	40	31.68	23.36	15.04
3,000	60	47.52	35.04	22.56
4,000	80	63.36	46.72	30.08
5,000	100	79.20	58.40	37.60
6,000	120	95.04	70.08	45.12
7,000	140	110.88	81.76	52.64
8,000	160	126.72	93.44	60.16
9,000	180	142.56	105.12	67.68
10,000	200	158.40	116.80	75.20

a bank account than to borrow it. It might be wise to arrange for more capital in the business so a surplus can be maintained to provide cash for paying invoices promptly.

Some dealer-contractors have organized corporations and sell stock to one or more relatives or friends who can furnish the additional capital. Before doing this, of course, it would be advisable to estimate the total income for several years to determine how much money would be needed to pay stockholders. Such a computation, based on past records, would show what could be earned over and above the amount being earned now.

Get Cash for Work

Another way to build capital is to develop a policy of obtaining cash for each job as soon as it is completed. Even though this practice cannot be carried out 100 percent, it is good business to keep as few accounts receivable as possible on the books.

It is neither common nor advisable for a dealer to offer a discount for cash, as does his supplier. Again, good business practice dictates that an understanding be established when the contract is signed that full cash payment is due upon completion of the work. (If financing is offered, arrangements should be made to have the cash as soon as possible from the financing institution.) The subject of cash payment of course should be broached diplomatically, as: "Mr. Brown, I've estimated the cost of this job on the assumption that you will pay cash when the work is finished."

Collect in Person

Some dealer-contractors present their statements in person, rather than mailing them. The fact that the dealer-contractor or his representative is present when his part of the obligation is fulfilled, just as he was when the contract was signed, reminds the customer of the agreement. Besides, it is much easier for a customer to put off paying a bill he has received through the mail than to offer an excuse to the man who has performed the work and is standing in front of him.

Some dealer-contractors schedule a visit to each customer about 30 days after the statement has been rendered, to make sure he is fully satisfied with the job, and to remind him of his obligation. If the customer appears satisfied but fails to offer payment for the work, the dealer-contractor asks, "Would it be convenient, Mr. Brown, to pay for this work now? I have several jobs ahead which make it necessary for me to stock quite a lot of new material. I like to pay my bills promptly and it would help if you could give me a check for the amount."

In borrowing money from a banking institution to take advantage of a cash discount, borrowers usually find bankers more receptive to the loan request when they learn that the money is needed to pay cash because of the discount offered by the supplier. It's a good idea to show him the supplier's statement as evidence of the amount of cash discount and the length of time needed to repay the money borrowed. Dealer-contractors should be willing to explain the source of funds from which they expect to repay a loan.

PRACTICAL APPLICATIONS

for engineering, installing and servicing
residential cooling systems



By S. W. Reid

Air Conditioning Engineer
Gilbert Associates, Inc.

Complete Inspection Sets the Stage For Independent Cooling System



...in an old house with a hot water heating system. Here, in case history form, are the steps necessary to provide the most efficient and economical summer comfort in a typical building which wasn't constructed with air distribution in mind

CONVINCED THAT MANY home owners do not enjoy summer comfort simply because they are only vaguely familiar with it, an air conditioning dealer-contractor early last spring initiated an intensive neighborhood door-to-door promotional campaign offering each home owner the story of residential air conditioning, applied to his individual need. To assure accuracy, the dealer-contractor asked permission to inspect each property several days before the interview to study problems and prepare solutions. Handbills distributed throughout the

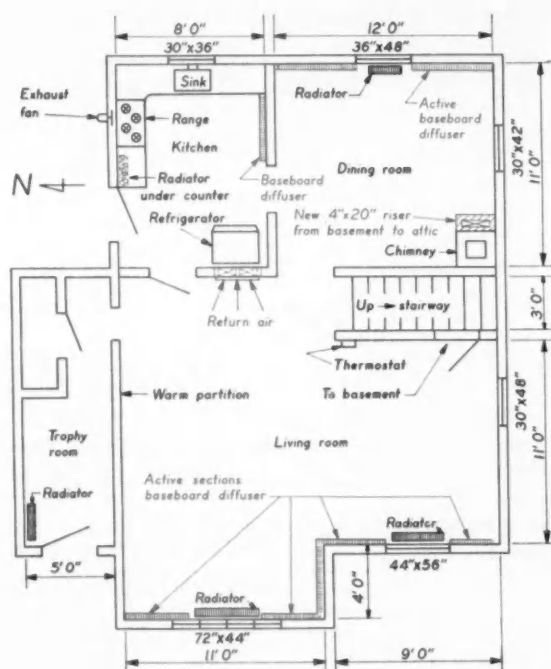
neighborhood clearly stated that the survey was primarily informative and absolutely no obligation would be assumed by anyone seeking the information offered. Although the campaign reached each home owner in the selected area, the dealer-contractor directed special attention toward home owners who already owned window units.

Survey Precedes Bid

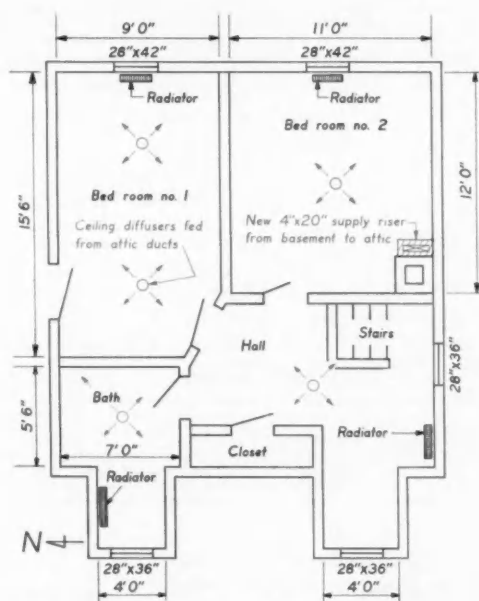
After inspecting each house, the dealer-contractor brought the home

owner sketches of the house floor plan upon which he had roughed in his suggestions for the best and most economical air conditioning arrangement. He also brought promotional literature describing the equipment he recommended and photographs of previous jobs he had installed in the area. He had preliminary cost estimates, operating cost figures and suggestions for financing. The visit was informal to create a friendly atmosphere and demonstrate personal interest.

Following the interview the home owner was asked whether his interest in air conditioning his home was intensified or lessened. If he indicated the latter, he was thanked for his time and invited to contact the dealer-contractor if he had a future change of mind. If he indicated increased interest, he was asked when he might consider a formal proposal. The answer



1 MAIN FLOOR of house described is cooled through baseboard diffusers fed by ducts under the floor. None of the partitions lines up between first and second floors except at stairway, so . . .



2 SECOND FLOOR rooms are served by single stack which runs along chimney to the attic, then feeds ceiling diffusers in rooms. Return air for both levels is collected by grille in kitchen partition

given by the owner of the house illustrated was "the sooner the better."

Want Independent Cooling

Let's assume we are assisting this dealer-contractor in his campaign by making the initial survey of the house illustrated. One of the first things we notice in the house is the hot water heating system. The housewife tells us a hand-fired burner was replaced about six years ago with an automatic oil-fired heating unit. At the same time, a circulator was installed. The family is not interested in a new heating system and would like to consider an air conditioning system which is entirely independent.

We sketch the floor plan, indicating room and window sizes and house orientation. We know from experience that it is often difficult to find a location for the kitchen supply register; therefore, we make a detailed sketch of the kitchen layout for study. Various construction features and other important factors are jotted down. For instance, wall construction is noted as frame, consisting of stuc-

co, insulating board sheathing, studs and plastered gypsum lath. Glass is all single, and there are no storm windows. Two inch batt insulation is installed in all second floor walls and ceilings, which are directly under an asphalt shingle roof.

Analyze Latent Load

On the basement sketch we spot the heater, oil tank and hot water tank and choose a tentative location for the air conditioning equipment. We also select and note methods of returning air from the conditioned spaces to the basement. We locate a floor drain in the laundry area for disposing of the condensate which will drain off the cooling coil. This drain, we find, connects to the city sewer. The basement floor is concrete throughout. There is no evidence of dampness due to ground moisture penetration so we discount the basement floor and walls as major factors in the latent load.

We spot the electrical panel on the basement plan and find that the capacity of the service is typical of

houses in this section—adequate in its day, but obviously insufficient to serve any major load increase such as the air conditioning equipment will impose. From our previous experience with the power company in this section, we know what changes will be necessary and about how much they will cost.

Checkout Alters Plans

We notice that the west side is well shaded by trees and we find ample space for locating an air-cooled condenser in the back. The all-important final checkout brings to light that the housewife forgot to tell us they would not want to include the trophy room-entrance hall in the conditioned area. Thanking her, we set up an evening appointment with her and her husband to give them the results of and recommendations from the survey.

Back at the office we get out National Warm Air Heating and Air Conditioning Association's Manual 11 and calculate the cooling load for the house on the worksheets provided with the manuals. If the supply of

TABLE 1 — HEAT LOAD CALCULATION is made from room measurements related to construction details which are converted to heat factors

Heat Source	Heat Factor	Living Rm		Dining Rm		Kitchen		Bedroom #1		Bedroom #2		Bath		Hall	
		Area	Btuh	Area	Btuh	Area	Btuh	Area	Btuh	Area	Btuh	Area	Btuh	Area	Btuh
1 Windows															
North (doors)	37	—	—	—	—	21	775	18	665	—	—	—	—	—	—
East	27	—	—	12	325	8	215	8	220	8	215	—	—	—	—
South	22	10	220	10	220	—	—	—	—	—	—	—	—	7	155
West	142	39	5550	—	—	—	—	—	—	—	—	7	1000	7	1000
2 Walls															
North	3.1	32	100	—	—	57	210	106	350	—	—	80	250	—	—
East	3.1	—	—	84	260	56	175	64	200	80	250	—	—	—	—
South	4.4	110	485	78	340	—	—	—	—	96	420	—	—	101	445
West	6.2	125	770	—	—	—	—	—	—	—	—	—	—	—	—
3 Partitions	3.4	120	410	—	—	—	—	—	—	—	—	—	—	—	—
4 Roof	5.0	—	—	—	—	—	—	140	700	152	660	70	350	182	910
5 People	300	4	1200	—	—	—	—	—	—	—	—	—	—	—	—
6 Appliances	1200	—	—	—	—	—	1200	—	—	—	—	—	—	—	—
Totals →		—	8755	—	1145	—	2575	—	2115	—	1545	—	1600	—	2510

Notes: 1. Heat factor × area = Btuh.

2. Heat factors for windows = Factor from NWAHACA Manual 11 × 0.62 shading factor for white venetian blinds at 45 deg angle

3. Heat factor for walls and roof = Factor from NWAHACA Manual 11 × U values of 0.22 and 0.10 respectively

4. Heat factor for partition = U value of 0.34 × 10 deg temperature difference

TABLE 2 — SENSIBLE AND TOTAL loads for rooms are calculated without accounting for shade (col. 1) and considering effects of shade (col. 2). Air is distributed at rate of 400 cfm per ton. Figures are rounded to nearest 5 for convenience

	1	2	3
	West glass shaded by blinds only	West glass full shaded by trees	Cfm
Living room	8755	5955	290
Dining room	1145	1145	55
Kitchen	2575	2575	125
Bedroom no. 1	2115	2115	105
Bedroom no. 2	1545	1545	75
Bath	1600	1080	55
Hall	2510	1990	95
Internal sensible Btuh	20225	16405	800
15 percent for ventilation	3035	2460	
Total sensible	23260	18865	
30 percent for latent heat	6065	4920	
Total	29325	23785	

worksheets has been exhausted, a form similar to Table 1 can be prepared. Across the top, each room is listed at the head of a column. Next, areas of windows, walls, partitions and roof are entered on the appropriate lines.

Find Net Wall Area

For each room the gross exterior wall area is found by multiplying the length times the ceiling height (in this

case it is 8 ft on each floor). Glass areas are subtracted to arrive at net wall areas. Doors in the kitchen and bedroom no. 1 are considered as windows for the calculations. The only "warm" partition is between the living and trophy rooms. The basement is closed and remains cool so there is no heat gain through the first floor. Heat will be gained on the second floor through the roof and room ceilings, so these areas are entered in our table.

Our next step is to determine the rate of heat gain through each square foot of exposed surface. Our findings, listed in Table 1 under Heat Factor, require consideration. In Manual 11 we find a basic table for heat gain through bare glass. These values can be reduced, if the glass is shaded, by multiplying by the applicable shading factors. In our case we have two north doors which are considered as glass. For these the full north glass factor of 37 Btuh per sq ft is entered in our table. No further correction is necessary since our outside-inside design temperature difference is 15 F, the basis for the values given. East, south and west walls all have windows which are shaded by white venetian blinds inside. The factor for this arrangement, not given in Manual 11, can be found in the ASHAE Heating, Ventilating, Air Conditioning Guide

as 0.62. Applying this figure to the bare glass factors of 44, 36 and 230, we enter the values 27, 22 and 142 in our table for glass in the east, south and west areas, respectively.

Wall Factors Are Variable

Heat factors for the walls are calculated somewhat differently than those for the windows, in that it is necessary to find both the U values (Btuh/sq ft/deg F) for the particular construction and the assumed temperature difference between inside and outside wall surfaces. The latter values incorporate adjustments for solar radiation and heat storage effect or lag as well as for the variations in actual dry bulb temperature difference between inside and outdoors.

The construction of the white stucco-covered frame walls has been described. There is no insulation between the studs. Since this type of wall is not listed in Manual 11, we again refer to the ASHAE Guide, where we find the U value is 0.22. The U value for the roof-ceiling construction with the 2 in. batt insulation is 0.10.

Now we need the temperature difference factors. Their selection depends partly on the geographical location of the house, which we find in the zoned map in Manual 11 is in an

area of medium daily outside temperature range, covered by a specific table of values. Since our basic design temperature difference is 15 F (95 F - 80 F) and the wall is light-colored frame, we find temperature factors as follows: north, 14; east, 14; south, 20; and west, 28. We also find the value for the roof is 50. Multiplying these factors by the respective U values for the walls and roof, we obtain the heat factor values entered in Fig. 2. For the warm partition, Manual 11 shows a U value of 0.34 which, multiplied by the assumed temperature difference of 10 F, gives a heat factor of 3.4.

Rate People, Appliances

Two remaining factors enter into the sensible heat calculation of Table 1. One is people; the other, appliances. In our case, four people are permanent residents. We choose to enter this load as part of the living room load rather than distribute it in accordance with Manual 11. Estimating the appliance load is quite involved. We choose to enter in the kitchen load an additional 1200 Btuh to allow for cooking, the refrigerator, gas pilot lights, the conditioned air fan, etc. This is just an empirical value developed from experience and recommended by at least one authority.

We now summarize our room sensible heat loads in Table 2. To these loads we arbitrarily add 15 percent for cooling outside air which infiltrates the house. (We plan no direct outside air connection to the system since the required amount is less than will enter unavoidably). We add an additional 30 percent for latent load. Both of these additions are recommended in Manual 11.

The results of our preliminary calculation are entered in column 1 of Table 2, wherein we see that the house sensible and total loads are 23,260 and 29,325 Btuh, respectively. At first glance it appears we need a 3 ton unit for this load since the corresponding capacities would be about 27,000 and 36,000 Btuh. A 2 ton unit with sensible and total capacities of 18,000 and 24,000 Btuh

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would seem too small. Before making our choice, however, we review the load calculation in search for any possibility of reducing the heat gain. The calculated gain through glass on the west side strikes our eye. In making this calculation, we had assumed that this glass was shaded only by the inside venetian blinds, for which the shading factor was 0.62. We find that we overlooked the large trees to the west, which completely shade the west windows. So we could have used a shading factor of 0.30, which would save 3820 Btuh in internal sensible heat. Our load summary would change to the values shown in column 2, Table 2, which could be compensated by a 2 ton air conditioner. We explain to the owner how we calculated the load and advise him that if the trees are ever removed, he may have to resort to awnings or louvered shading screens on the west windows.

Having selected a 2 ton unit, we design for air distribution at the rate of 400 cfm per ton and apportion the air to the various rooms in accordance with the internal sensible heat load.

Run Single Stack to Attic

Our next step is to plan the duct and air distribution system. Our

floor plans (Figs. 1 and 2) show that none of the partitions lines up between the first and second floors except at the stairway. The best way to get air to the second story rooms is through a single stack along the chimney to the attic space and then to ceiling diffusers in the rooms. This stack can be furred in and plastered inexpensively and without extensive structural alterations. Return air will flow down the stairway into a grille in the kitchen partition as shown on page 53.

On the first floor, air will be distributed through baseboard diffusers in the three rooms as indicated. These diffusers will be fed by ducts under the floor. The arrangement will not interfere with the radiators and should provide draft-free circulation. First floor return air will pass through the same grille which collects air from the second floor.

All Ducts Insulated

We size our ducts from information in Manual 11, using rectangular ducts in the basement and round ducts in the attic. All ducts will be insulated with a vapor barrier on the room side to prevent sweating and loss of unit capacity. All registers are selected from the catalog of a reputable manufacturer.

Air Conditioning Survey

Bares Useful Market Data

Danville, Ill. Poll of 372 consumers exposes pressing need for public education and aggressive sales promotion to dispel mistaken opinions about the functions and benefits of central air conditioning

TABLE 1—RESPONDENTS TO SURVEY are from all walks of life, represent reliable cross-section of air conditioning market

OCCUPATION	Number	Percent
Professional, semi-professional, proprietors, managers and officials	92	24.7
Salesmen, clerical workers	46	12.4
Craftsmen, foremen, operatives	102	27.4
Service workers, domestics and laborers	56	15.1
Retired	47	12.7
Unknown	29	7.8

TABLE 2—ASKED WHAT FUNCTIONS they thought room units and central units perform, respondents turned in a wide variety of uninformed opinions. There was no limit to number of choices and percentages listed are for total answers

FUNCTION	Room Unit (percentages)	Central Unit (percentages)
Cools	30.7	25.5
Heats	2.2	5.5
Removes water	11.0	9.6
Adds water	3.4	3.6
Removes dust	14.3	14.7
Removes pollen	12.2	11.3
Circulates air	23.0	21.0
Don't know	3.0	8.7

AMONG THE MANY prerequisites for success as a dealer-contractor is the ability to analyze the local market and direct promotion accordingly to get the best results for the money invested. Consumers don't follow the same purchasing pattern year after year — they're as easily influenced by glamour and "keeping up with the Joneses" as they are by necessity. The merchandiser who can develop consumers' desire for his product will see his sales volume grow.

To develop consumer acceptance of a product, the merchandiser must know his market. The most effective way to uncover consumer preferences and whims is to survey the market area. With the information obtained from his survey, the merchandiser can carefully direct appeals to those who are most likely to be good prospects.

Surveys often reveal surprising facts. Accepted opinions of consumer interests are frequently shattered by facts. Firsthand knowledge can prevent waste of effort and money. Among the many factors that influence consumer attitudes are the season, the neighborhood and the geographical location of the community.

Surveys Pay Off

Local market surveys need not be expensive. Money spent in this direction is a wise investment which pays off in helping the dealer-contractor select the best advertising media, slant advertising properly, locate productive markets and formulate the approach to be used by his salesmen.

Analyze Slow Season Market

A central residential summer air conditioning market survey conducted in Danville, Ill. produced several revealing facts about consumer attitudes. The survey was conducted by a group of college students early in November to find out if home owners could be interested in purchasing central residential air conditioning during the fall. The object was to find out if leads and sales could be developed that would provide work for installation crews during the normally slow season.

The Danville survey was conducted among 372 people engaged in widely varying occupations (see Table 1).

Sidestep Personal Opinions

Each person interviewed was asked 42 questions. To avoid conjecture by respondents, they were not told that the purpose of the survey was to learn their opinions of

TABLE 3—AIR CONDITIONER ranked eighth as first choice, sixth as second choice and third as third choice in answer to pointed question: "Which three (in order of preference) of these products, not bought during the past year, would you now buy if you could afford them?"

PRODUCT	FIRST PREFERENCE		SECOND PREFERENCE		THIRD PREFERENCE	
	Number	Percent	Number	Percent	Number	Percent
Television set	34	9.1	22	5.9	24	6.4
Automobile	42	11.3	20	5.4	16	4.3
Automatic washer	76	20.5	29	7.8	24	6.4
Automatic dryer	47	12.6	67	18.0	29	7.8
Second car	18	4.8	13	3.5	16	4.3
Hi-fi set	17	4.6	21	5.6	17	4.6
Wall-to-wall carpeting	27	7.3	33	8.9	38	10.2
Living room furniture	35	9.4	45	12.1	40	10.8
Air conditioner	25	6.7	26	7.0	34	9.2
None of the above	51	13.7	96	25.8	134	36.0

TABLE 4—ALL INTERVIEWEES responded to simple query: "You've been in air conditioned stores, theaters, or other public buildings . . . have you ever been in an air conditioned home?"

Answers	Number	Percent
Yes	279	75.0
No	93	25.0

TABLE 5—NON-OWNERS were asked: "Have you seriously considered the purchase of an air conditioning device?"

Answers	Number	Percent
Yes	53	14.2
No	264	71.0
Did not reply	55	14.8

central residential air conditioning, although these answers were solicited to provide a basis for slanting sales promotion toward the layman's views of the subject.

Range of Opinions Is Interesting

The variety of opinions about the primary function of an air conditioner was one of the most interesting survey revelations. Table 2 shows, in percentages, what functions the respondents believed a room unit and a central unit perform.

Need Public Education

From the close correlation of answers (Table 2), especially in regard to removing water, dust and pollen, and adding water, we can reasonably conclude that the public knows very little about these features. This is par-

ticularly significant because it is in these areas that the central unit is far superior to the room air conditioner. The public apparently doesn't know this.

Many Answers Ill-Founded

Another question which brought significant replies was, "Is there anything you don't like about air conditioning?" Two-thirds of the respondents gave affirmative answers. But 48 percent of non-owners of air conditioning units listed reasons for not liking air conditioning (unhealthy, 12.1 percent; too great a change from warm to cool air, 19.4 percent; keeps house too cold, 16.9 percent) which were not mentioned at all by owners of central air conditioning. In other words, almost half the potential customers dislike air conditioning for reasons that exist only in their minds.

Are Sources Reliable?

And where do they get their opinions and knowledge about air conditioning? In response to the question, "From what sources have you received your information about air conditioning?" fifty-six percent cited non-authoritative sources — their own observations or experiences or those of friends and relatives.

Only 12.7 percent of the respondents listed advertising as their only source of information. Other sources which can be considered reliable — dealer-contractors, articles, pamphlets and salesmen — added up to another 20.4 percent. Thus, only one-third of the answers were founded on authoritative information.

The answers to other survey questions, while not as decisive as the findings quoted, drew similar pictures.

Judging from the Danville survey, we must conclude that the public does not know what central air conditioning is.

Double-Check Service Contract Piles Up Modernization Leads



THOROUGH EXPLANATION of customer instruction card includes an actual dry run, demonstrating functions of each component listed on the card

- Properly-functioning heating systems build customers' confidence in dealer-contractor's work
- More frequent contact with customers increases servicemen's opportunities to discuss modernization
- Free emergency service at night and on holidays impresses customers with company's reliability



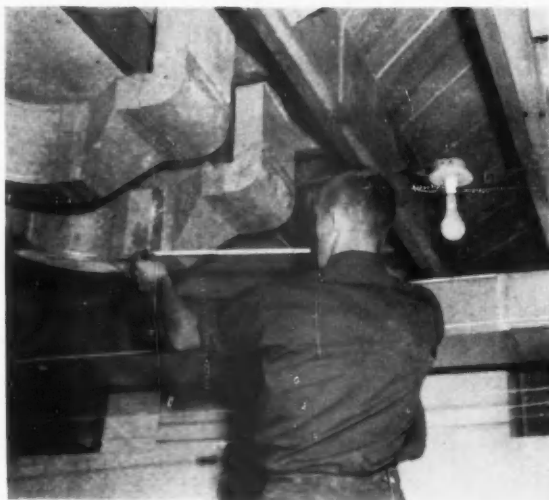
NON-CONTRACT service customers with a record of frequent calls are sent copies of *American Artisan's Standards for Rating Heating Systems* along with a letter telling how service calls can be reduced and greater comfort enjoyed by having their systems modernized

A TWICE-A-SEASON inspection and adjustment contract is bringing in lots of modernization leads for Sloane Heating and Air Conditioning Co., Lansing, Mich.

Keeping equipment in top working order throughout the heating season serves three purposes: 1) It builds contract customers' confidence in the company's ability to install and service equipment properly; 2) it gives company employees more opportunities to tell their customers about new methods of air distribution and new equipment designed to improve the comfort in their homes; and 3) the emergency night and holiday service at no extra cost builds customer good will.

Mid-Season Check Pays Off

The contract calls for complete on-the-job cleaning of the mechanical equipment, adjusting or replacing worn controls and a performance check-up just before the heating season; and a second inspection and adjustment in January or February. This second call accomplishes three important functions: 1) It enables servicemen to head off malfunctions caused by clogged air filters, worn blower bearings, rusted humidifiers, etc. before major repair jobs are necessary, thereby building customer appreciation for the service; 2) it makes the home owner more aware



..... **EXISTING DUCT SYSTEM** is used
wherever possible in moderni-
zation work. On-the-spot
measurements of ducts and ...

.....
.....
DETAILED DRAWINGS assure
accuracy of necessary new fit-
tings and connections to exist-
ing system

of the job being done by his heating system and gives him a chance to ask questions while the equipment is operating; and 3) it keeps the service department busy during periods when it might otherwise be idle.

The twice-a-year inspection contract is offered to owners of both gas- and oil-fired furnaces. The contract for oil-fired furnaces sells for \$25 and for gas-fired furnaces, \$16.

Letters Offer Service

Contracts are offered via direct mail to prospects who have not used the service and to new customers who have subscribed to the service for only one year. The contract is introduced in a letter which stresses the importance of preventive maintenance and lists 12 services that are essential to proper performance of equipment throughout the heating season. Interested home owners are invited to return a self-addressed, prepaid postal card enclosed with the letter.

In May, each holder of an inspection and adjustment contract receives a reminder that the heating season has ended, and that he has been served according to the contract, which has now expired. He is urged to renew the contract for the next heating season by signing and mailing the enclosed prepaid, self-addressed postal card.



This approach simplifies renewal of the contracts, and eliminates the complications of signing and discussing a lengthy contract every year.

Troubles Bring Sales Call

The thorough checkup of each heating system by the serviceman during his periodic inspections often opens the door to a modernization sales presentation. Major malfunc-

tions, burned-through or ruptured heat exchanger casings, etc. are immediately brought to the attention of the home owner as well as to Joseph C. Sloane, owner of the company. Mr. Sloane follows up the lead by preparing a complete presentation on what modernization will mean to the home owner. This presentation includes not only the cost of repairing the existing system but also a complete layout of a moderni-



MORNING CHECK-OUT of service truck stock enables men to complete most service calls without returning to the shop for parts



MAJOR REPAIRS are performed in the shop which has well-equipped test bench for checking overhauled parts before they are sent back to the job

zation job and the cost involved. A floor plan showing existing ducts and air discharge openings is compared with a similar layout illustrating new ducts, discharge air openings, and additional equipment. Mr. Sloane emphasizes that existing ducts are used wherever possible to keep the cost at an absolute minimum.

Standards Back Presentation

One of the strongest sales tools Mr. Sloane has found is American Artisan's *Standards for Rating Heating Systems* card, to which he refers constantly in his presentation to

point out that poor heating systems no longer need be tolerated, that the advantages of a "Good" heating system can and will be obtained by complete modernization.

He backs up his recommendations with literature describing the equipment he recommends to make the modernization a complete, up-to-date job.

When the job is sold, the sheet metal shop foreman visits the site and makes all necessary measurements for new duct work and alterations in the existing duct system. He carefully notes the physical features of the job and designs the duct sys-

tem accordingly, selecting the best locations for the new equipment and the duct work. After laying out the new duct system, he details each of the non-standard fittings needed to make the system perform properly. All non-standard fittings for modernization work are made in the company's shop from the detail patterns.

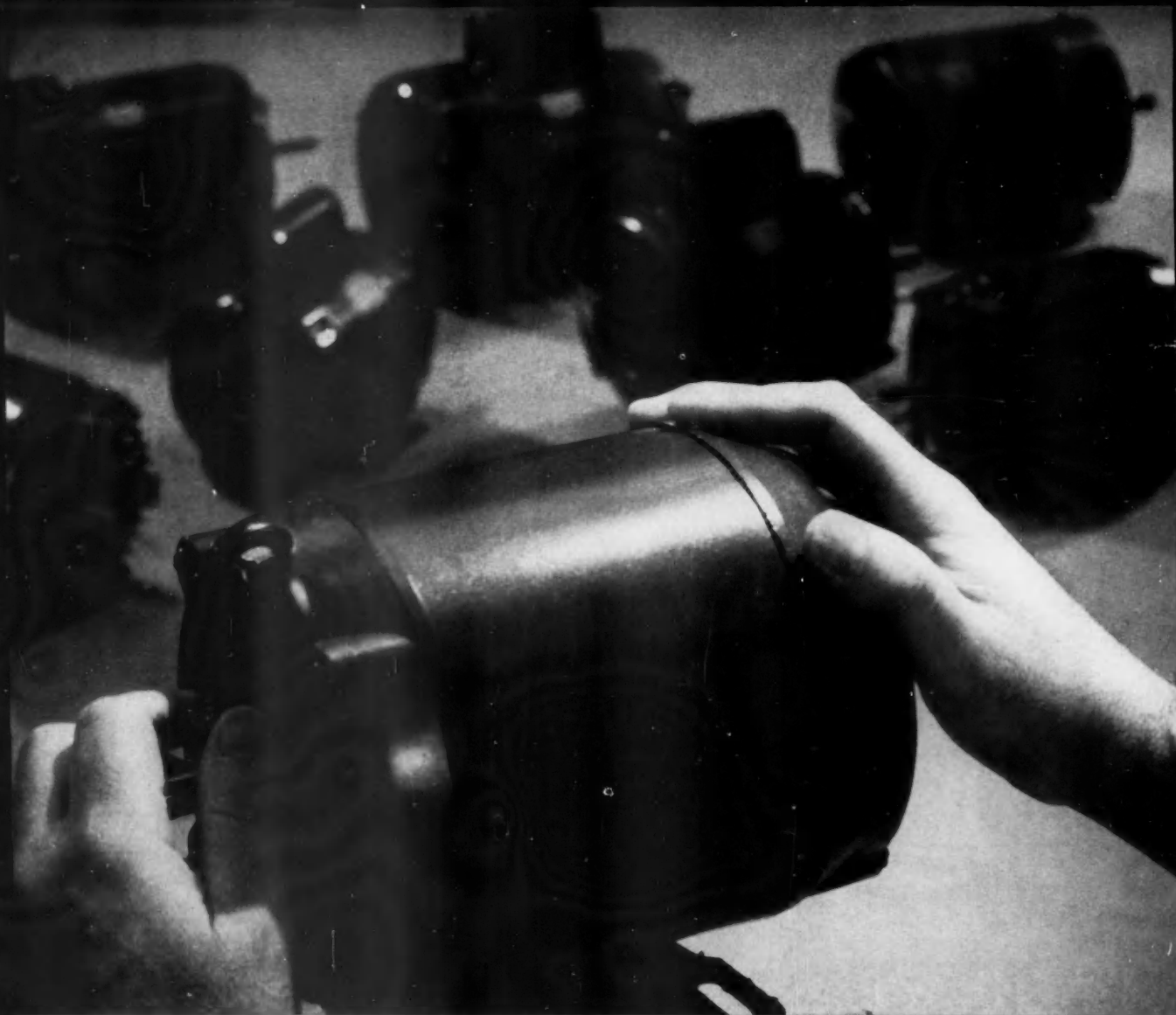
Offer Service in Follow-up

Completion of the installation brings the serviceman to adjust and test the system. Then Mr. Sloane returns and shows the customer how the equipment operates, outlines the owner's responsibilities and discusses other essential features the customer needs to know. He explains the one-year free service guarantee, and follows up with a discussion of the twice-a-season inspection and adjustment contract which he recommends for the second and ensuing years.

The company's panel service trucks are kept spotlessly clean. Large signs identify each vehicle with the company and announce its services to the public. The service trucks are checked every morning to make sure they contain adequate supplies of parts and equipment to avoid unnecessary returns to the shop.



WHEN SERVICEMEN SPOT TROUBLE in service customer's heating system, sales portfolio is prepared, containing literature, layouts and other tools for selling complete modernization job



Solve your motor problems with Century Electric's complete fractional-horsepower line

You can make your job easier with Century Electric's complete line of fractional-horsepower motors. Here's how:

Easy ordering—You save time because you get answers to all motor problems from one source. This means you don't have to shop around for the motor you need. You name it—capacitor, jet pump, unit heater, oil burner, brake, gear—any one you want, and in all types of enclosures too.

Fast shipments—From Century Electric's complete stock you can get a motor for any standard application. In addition, motors are packed in sturdy boxes so if you reship you know they'll arrive in good condition.

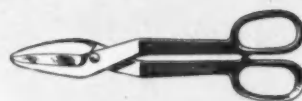
Application know-how—You want to be sure you have the *right* motor for the job. And if you need expert help, you can get it from your nearest Century Electric sales engineer. He knows motors inside and out because he sells, applies and thinks motors day after day.

This is why you get *more* than just a motor from Century Electric. You get a quality product, fast answers and engineering application know-how on motors up to 400 hp—all from one source.

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri Offices and Stock Points in Principal Cities

Century



COMBINATION PATTERN
No. U412, 12" only.

SNIPS FOR EVERY SERVICE



HEAVY DUTY PATTERN
No. U416, 16" only.



CIRCULAR CUTTING PATTERN
No. T412, 12" & T47, 7".

STANDARD PATTERN, No. S410
Seven other sizes, 7" to 14".



AVIATION SNIPS, No. V19R
Right Hand, Cuts to left.



AVIATION SNIPS, V19L
Left hand, cuts to right.



NEOPRENE INSULATING SLEEVES
Available for all Aviation Snips. Here shown
on No. V19S, straight cut.

Crescent Tinner's Snips are forged of selected steel and blades ground on special grinding machines. They are hardened by Crescent's own selective induction process to insure long, satisfactory service. These easy-cutting, well-balanced snips are made in four patterns; standard, circular cutting, combination and heavy duty.

Sold by hardware dealers and industrial distributors everywhere.

AVIATION SNIPS. Keenly ground, hard, tough alloy steel blades with machine serrations...can be factory reground. Compound leverage produces tremendous shearing power. Three patterns.

CRESCENT TOOLS

Give Wings to Work

*Sign of the Artisan
Symbol of Excellence*



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by
CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK

More to Sell*

with



* **HIGH CAPACITY**

* **POSITIVE CONTROL**
(By Humidistat—Set It, Forget It)

* **AUTOMATIC OPERATION**
(Furnishes Exact Humidity Needed —
But Only When Needed)

PLUS! BACTERIA REMOVAL

Now...you have even more to sell with Aprilaire Humidifiers!

The unique operational advantages of this newest principle of automatic humidification now includes an outstanding and revolutionary first—**BACTERIA REMOVAL!**

Up to 70% of all bacteria is removed from the air stream passing through the Aprilaire...and this new and vital health feature is a premium benefit to offer your customers.

And the Aprilaire's many other features—positive control, high capacity, constantly maintained proper relative humidity—all add up to better health, greater comfort and economy. For more to tell...and sell...it's the Aprilaire!

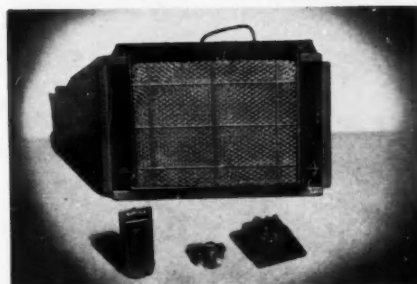
SEND IN COUPON FOR
COMPLETE INFORMATION



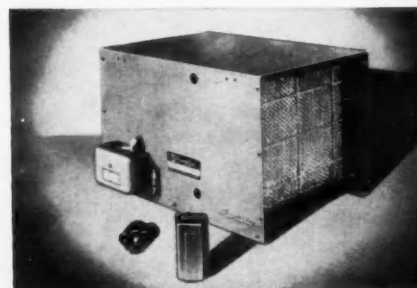
... PRODUCTS OF RESEARCH

RESEARCH PRODUCTS *Corporation*
MADISON 10, WISCONSIN

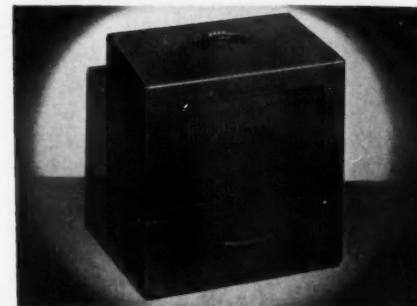
3 NEW MODELS!



PLENUM MODEL — for forced air furnaces. Easily mounted on warm air bonnet. Uses plenum heat for evaporation — furnace fan and ducts for distribution of humidified air. Two models available — Model 110 with capacity of 5.3 lbs. of water per hour; Model 112 (New) with capacity of 9.2 lbs. water per hour.



UNIVERSAL MODEL — installed on or between joists in basement or crawl space. Flexibility of installation permits baseboard or wall registers. Heat source — steam or hot water. Capacity up to 9 lbs. water per hour.



PORTABLE MODEL — No installation necessary. Ideal for offices, apartments — wherever a permanent installation is not desired. Push-button control for high or low humidification, heating or fan only. Capacity up to 4.3 lbs. water per hour. Humidistat is optional equipment.

RESEARCH PRODUCTS CORPORATION
Dept. 91, Madison 10, Wisconsin

I'm interested in the Aprilaire. Send me more information including literature, prices, specifications and the profit-making proposition.

CO. NAME _____

ADDRESS _____

CITY _____ STATE _____

BY _____



Idea Exchange for Dealers, Contractors

Good Will Letter Cements Customer Relations

... by emphasizing importance of dealer-contractor's services

BUILDING CUSTOMER GOOD WILL is one way of retaining business and locating new prospects, says Chester C. Duval, Duval Sheet Metal Works, Inc., Lexington, Mass. Mr. Duval has established an enviable relationship with his customers by sending them annual reminders about the importance of periodically servicing their heating systems. The letter begins, "We know you are anxious to avoid trouble with your heating system; however, a heating system, like any other piece of mechanical equipment, requires attention periodically.

Letter Offers Services

"There are certain things that you as an owner can do to help the heating system perform its job properly. Other service operations require special instruments that you do not have but are essential to economical and efficient operation of the burner. These service operations should be performed by qualified, trained mechanics whose services we offer you.

"To service an automatic winter air conditioning system it is necessary to understand the principles of the burner and the controls. A warm air winter air conditioning system is composed of a 'heating unit' (which contains the furnace, a blower, an oil or gas burner, a humidifier and air filters); a 'distribution system' (which is made up of duct work, warm air registers and return intakes); and the 'control system' which governs the operation of the equipment.

"Each component of the system is important to the satisfactory comfort performance of the entire system and requires periodic attention. The best available heating unit on the market will not give satisfactory results if it is attached to a poorly designed and installed distribution system, and vice versa. Most heating engineers agree that a properly designed and installed warm air winter air conditioning system will provide more indoor comfort than any other type of heating plant.

"Some of the things that you as a home owner can

do to help your heating system in its performance are:

- 1) Oil all motors at least once a year with No. 30 oil.
- 2) Oil (or grease) blower bearings once a year.
- 3) Clean or change air filters at least once every 3 months.
- 4) Check the automatic humidifier to see that it is working and if new evaporating plates are required; clean water pan.

Lists Technical Services

"Additional annual services which should be performed by a mechanic are:

- 1) Check fuel burner operation and flue gas CO₂.
- 2) Check adjustment of draft regulator.
- 3) Check smoke stack temperature.
- 4) Make a smoke test.
- 5) Clean burner electrodes.
- 6) Check automatic oil valves.
- 7) Change cartridge in oil filter.
- 8) Test blower belt to see if it is too loose or too tight.
- 9) Clean fan blades on burner and furnace blower.
- 10) Vacuum interior of heating unit.
- 11) Check combustion chamber for serviceability.
- 12) Check operation of all automatic controls.

"Things you can do if the heating plant fails to operate are:

- 1) See if fuse is burned out. Replace the fuse and if it burns out again, call us for service.
- 2) If the fuse is in good condition, check the reset button on the control. If the unit starts but cycles off on the control a second time, call us for service.

"We hope this timely reminder will help you enjoy another year of carefree comfort. If we can be of service, do not hesitate to call on us."

Friendly and informative letters such as this build customer good will and produce leads. Mr. Duval reports this letter is one of his most productive sales promotion pieces.



Blast off to new profit highs

... with the Round Oak **ROCKET**

**AN ADVANCED, NEW LINE OF SECTIONAL GAS FURNACES
FEATURING EXTRA-LARGE BLOWER CAPACITY FOR AIR CONDITIONING**

AIR APLENTY FOR TRUE SUMMER COMFORT—One glance at these ratings tells you that ROCKET has what it takes for effective summer cooling.

BTU INPUT	CFM AT 0.5" ESP
60,000	1200
85,000	1600
115,000	2000

Larger capacity units coming soon.

AN IMPROVED "JOB-PROVED" HEAT EXCHANGER—Here's a heat exchanger that's engineered for top efficiency. Sectional steel combustion chambers with "proved-on-the-job" airflow design are spaced on 4½" centers with 2¼" minimum clearance between sections to give ample air flow and high heat transfer. Improved, quiet-burning, ribbon type burner for high combustion efficiency.

THE REDSTONE

... for builders who are interested in high quality at lower prices. Btu inputs are the same as the Rocket but CFM ratings are somewhat less. Furnished with Honeywell V-81 silent gas valve and a standard heating thermostat. Same copper tone finish but no chrome trim.

CUSTOMER-BENEFIT FEATURES TO HELP YOU CLINCH SALES

- Pleasing copper tone cabinet handsomely trimmed with gleaming chrome.
- One thermostat for year-round comfort conditioning.
- Approved for close-clearance installations, such as closets, etc.
- Belt driven blower.
- Trouble-free Honeywell V-81 gas valve.
- Tried and proved by actual in-the-home installations.
- AGA approved.

... and the price is *RIGHT*. See your Round Oak Distributor. Or write us.

ROUND OAK COMPANY, INC.
DOWAGIAC, MICHIGAN

SEE YOUR ROUND OAK DISTRIBUTOR, YOUR ONE-STOP HEADQUARTERS, FOR HEATING, AIR CONDITIONING AND HEAT PUMP EQUIPMENT . . . ELECTRONIC AIR FILTERS . . . PIPE FITTINGS, REGISTERS AND GRILLES.

Federal Laws Permit "Good Faith" Price Cutting

U.S. court sets the legal boundary at the point where prices are lowered "not to meet, but to beat, competition" and upholds businessmen's right to adjust prices in good judgment

A FEW MONTHS AGO a United States court heard the complaint of a dealer that he had been made the subject of a war of attrition. His competitor classified his activity as merely vigorous competition.

The complainant, who had thrived undisturbed in his marketing of goods for years, asserted that the perpetrator of the price war had not only reduced prices to meet his own, but also had staged an intensive advertising campaign featuring this reduction. The complainant's sales, as a consequence, had declined steadily for over two years. On the other hand radical price cutting had been directly responsible for the competitor's very survival in the field.

Statute Is Qualified

The complaint was based on a federal statute which provides that a dealer cannot discriminate in price between customers "where the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly in any line of commerce or to injure, destroy or prevent competition." This prohibition is qualified, however, by the statement that the law does not prevent a reduction of price "made in good faith to meet an equally low price of a competitor."

The court absolved the competitor, observing that while the situation was undoubtedly injurious to both dealers, a loss of profits or economic injury resulting from this competitive situation did not entitle a competitor to relief.

"In short," said the court, "this

competitor's action may be condemned only if its drop in prices was not to meet, but to beat, competition." This terminology aptly defines the boundary to legal price cutting.

Favors Four Customers

In an earlier action, the Supreme Court upheld a lower court decision nullifying a ruling by the Federal Trade Commission against a distributor in a large midwestern city for violation of federal statutes against monopolies. The distributor had cut prices to four of its 362 dealer-customers, in the course of a price war in the metropolitan area. The courts agreed that the seller may find it necessary as a matter of survival to meet a competitor's lower price offer to avoid losing a large customer to the competitor. The Supreme Court upheld the right of a seller to exercise "sound judgment to determine when and under what circumstances it will reduce its price in order to meet that

Price cutting is covered in state and federal laws with which dealer-contractors should be familiar. This is the last in a series of four articles dealing with this important subject. Previous articles considered state laws protecting and prohibiting price cutting, and federal laws against this practice.

of a competitor. The law did not require this seller to reduce prices in any instance; it only authorized it to do so under the limitation imposed.

"This seller had the same right to reduce its price in order to retain a customer, as it had to refuse to reduce with the risk of losing a customer. The 'good faith' defense would be meaningless if the seller was required to reduce its price alike to all customers regardless of the quantity in which they bought and their ability to pay."

At the same time, a federal appellate court on the Pacific coast was hearing a case against a dealer who had cut his prices to the level of a competitor's within a certain area, leaving prices unchanged outside the area affected by the competition.

Interpreting the federal law against price cutting, the court declared that any ruling against lowering prices by a firm doing an interstate business would not be in the public interest.

Self Defense Is Factor

The public is interested in obtaining goods at the lowest price possible, the court explained. "But it is well established that Congress did not seek by the statute either to abolish competition or so radically to curtail it that a seller would have no substantial right of self-defense against a price raid by a competitor.

"Congress was dealing with competition which it sought to protect; a monopoly, which it sought to prevent. There is no presumption set up anywhere that merely because there is a differential in various areas necessarily a price discrimination exists. But even if discrimination be found, it is not in and of itself denounced but only when destructive consequences are probable."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

when time is money

Cost conscious plumbing and heating contractors rely on fast installing AMERIVENT double-wall gas vent pipe. They know that for approved venting of water heaters, furnaces, boilers and space or wall heaters, sturdy lightweight AMERIVENT installs quicker with less labor time.

No waste, cementing or cutting with AMERIVENT. That's why this complete line of snap-together pipe and fittings is first choice for residential and commercial gas venting applications. Contractors know too, that across the U. S. and Canada their local AMERIVENT jobber stands ready to supply their individual requirements.

If you would like to know more about AMERIVENT we invite you to write for a completely descriptive catalog. Address AMERIVENT, Dept. CR.

America's finest double-wall gas vent for residential and commercial use.

AMERIVENT

A Division of American Metal Products Company, Inc.



6100 Bandini Blvd., Los Angeles 22, Calif.





IT HAPPENS EVERY TIME — The customer's interest goes up immediately . . . and the door swings open wide . . . whenever a heating and cooling dealer shows up with an eight-foot Thermo-Base unit . . . bringing with him a guarantee of perfect comfort, summer and winter, with no drafts. Effective selling is now made simple by the dealer's complete confidence in the comfort results of the Thermo-Base perimeter system of air distribution.

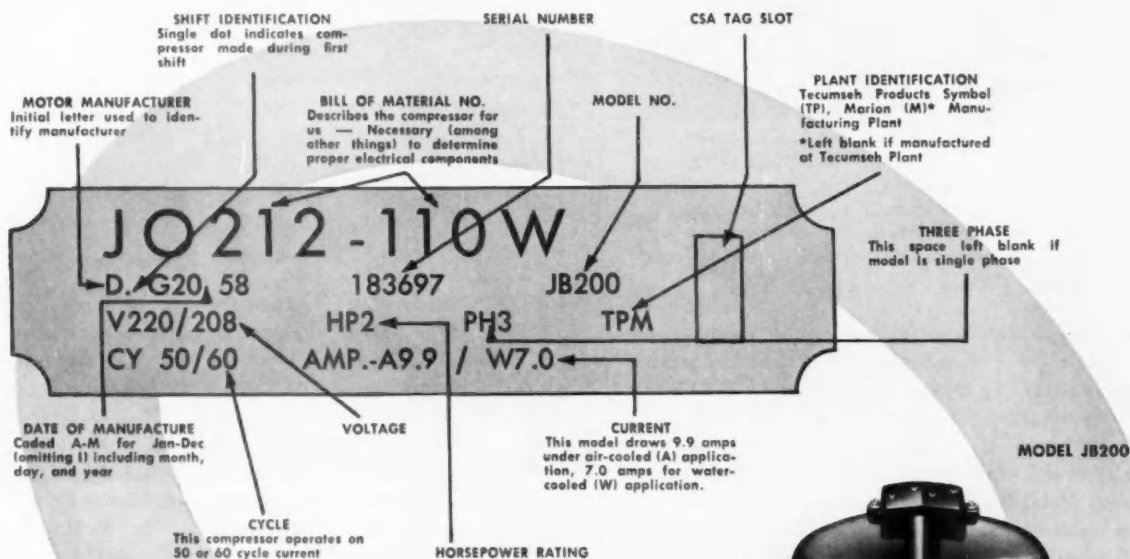
Gerwin Industries, Inc. *Thermo-Base*[®] Michigan City, Indiana
Standard, Glass Wall and Commercial Models

No. 1 in a series on better compressor servicing



Herman Hermetic Hints

ON Proper Compressor Identification



Tecumseh compressor serial plates are as valuable as fingerprints in identifying your particular model. These embossed plates, which you will find spot-welded to the shell of every Tecumseh and Marion compressor, carry all information pertinent to the compressor. This most recent serial plate revision (effective with 1958 production) emphasizes legibility and also makes provision by way of the slot at the right, for attachment of the CSA (Canadian Standards Association) tag where required. Know your serial plate: With this information your Tecumseh wholesaler can supply you with exact replacement parts or the proper replacement compressor.



The Leader Serving Leaders in the Air Conditioning and Refrigeration Industries

TECUMSEH PRODUCTS COMPANY

MARION, OHIO

TECUMSEH, MICHIGAN

EXPORT DEPT: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan

WHAT THE ASSOCIATIONS ARE DOING

Chicago Area Gets 50 New Sheet Metal Journeymen

... at apprentice graduation ceremony emphasizing cooperation



E. B. BROWN JR. (right), chairman of the Ventilation and Air Conditioning Contractors' Association of Chicago apprenticeship committee, congratulates James T. Tracy Jr. upon receiving his certificate of completion. James T. Tracy Sr. (second from left), secretary-treasurer, Local 73, and Henry J. Couch, executive secretary, VACCAC, wait their turn

AN ANNUAL DINNER honoring apprentices who have completed their four-year training period since the previous dinner was held is sponsored each year by the Chicago Joint Apprenticeship Committee for the Sheet Metal Trade. This year there were 50 new journeymen — 14 more than last year — joining the labor force of Local 73 Sheet Metal Workers' International Union. This gain is the result of intensified effort on the part of the apprenticeship committee to strengthen the local labor force. However, the addition of a larger number of apprentices to the journeyman work force was offset by the deaths during the past year of 48 journeyman sheet metal workers belonging to Local 73.

The joint apprentice committee is composed of representatives of three contractor associations serving the Chicago area and of Local 73 which serves Cook and Lake counties. The contractor associations are the Ventilating and Air Conditioning Contractors Association of Chicago, the Sheet Metal Contractors of Greater Chicago, and the Air Conditioning Contractors' Alliance. The chairman of the joint apprenticeship committee is Roy H. Nelson, a member of the Sheet Metal Contractors of Greater Chicago. James T. Tracy, secretary-treasurer of Local 73, serves as secretary of the committee.

Mr. Tracy, acting as master of ceremonies at the dinner meeting, reminded the new journeymen of their responsibility to the employers who had made their training possible. He said, "On behalf of the officers and members of Local 73 I welcome you as journeyman sheet metal workers. The motto of our local is 'Good craftsmen

make good employees.' Our reputation has been built by your fellow members, and you are expected to work hard and diligently to maintain the prestige we enjoy not only in employer circles in this locality but also in the International Association.

"The soundness of your apprentice training program is due in large part to the interest of your employers, who send representatives to a joint apprenticeship committee meeting once every month. The program is regularly reviewed. Spots that can be improved upon are discussed and paths of action are outlined to keep this apprentice training program one of the best in the nation.

"Your employers are vitally interested in the apprentice training program because good journeymen help them to cut their labor costs. Thus the sheet metal contractor is able to offer competitive prices in bidding against contractors using other types of materials.

"You are invited to attend the regular meetings of your local, to participate in its affairs and to keep up with what's going on both in the local union and in the industry. By so doing, you will become a more valuable employee and can in a measure repay those who have contributed towards your training."

How the sheet metal trade is integrated with the entire building construction industry was outlined by Earl J. McMahon, president, Chicago and Cook County Building and Construction Trades Council. Mr. McMahon pointed out to the recent recipients of certificates of completion that as journeymen they are important cogs in the building trades council. As such, he said, they should be responsible for furthering the aims of the construction industry as a whole. He suggested that they apply themselves to learning ways of using the new tools being developed to produce and install better sheet metal products and to learning to understand new equipment being introduced by manufacturers.

Mr. McMahon noted that as journeymen they also hold the responsibility of contributing to the training of apprentices who will work with them both in the near and distant future. Often, he said, the best capabilities of apprentices are kept hidden because journeymen fail to trust apprentices to undertake certain operations that are essential to their training and their understanding of the sheet metal trade. A journeyman with confidence in apprentices can help both the union and the employer as well as the apprentice himself by passing along tips that he himself has learned through constant repetition of certain operations.

(More association news on page 72)



Cut, form, hammer Galvanized Steel Sheets —the zinc stays on

These are the galvanized steel sheets that take the sharp bends you see in the best-made ductwork. They're USS Galvanized Steel Sheets—strong, yet easy to form. USS Galvanized Steel Sheets *stay protected* because the zinc stays on. Cut, form, roll, hammer, lock-seam

these sheets—no zinc flakes off the steel. Pride in your workmanship should be backed by the best of materials.

Why not make *your* ductwork with top-quality steel—use USS Galvanized Steel Sheets.

USS is a registered trademark

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
American Steel & Wire—Cleveland
United States Steel Supply—Steel Service Centers
United States Steel Export Company

 **United States Steel**

WITH THE ASSOCIATIONS

(Continued from page 70)

Minneapolis Group Gets New Secretary

DALE O. LYNCH has been appointed executive secretary of the Air Conditioning & Heating-Roofing & Sheet Metal Association of Minneapolis, Inc. For the next several weeks, Mr. Lynch will visit various association members for the purpose of getting better acquainted and to discuss ways of expanding and improving the association's services.

Canadian Group Schedules 1959 Schools

A TOTAL OF 19 BASIC and three advanced schools will be conducted by the National Warm Air Heating and Air Conditioning Association of Canada during 1959. First of the basic schools will be held Jan. 6-9 at Toronto. Others are scheduled for: Jan. 13-16, Moncton and Hamilton; Jan. 20-23, Kitchener; Jan. 27-30, Peterborough; Feb. 3-6, Sarnia; Feb. 10-13, Winnipeg and Windsor; Feb. 17-20, Regina and North Bay; Feb. 24-27, Saska-

toon and Ottawa; Mar. 3-6, Edmonton; Mar. 10-13, Dawson Creek and Sherbrooke; Mar. 17-20, Calgary and Montreal; Mar. 23-26, Vancouver and Quebec. The three advanced schools will be held in Halifax, Jan. 20-23; Brantford, Feb. 3-6; and Banff, Mar. 31-Apr. 3.

New England OHI Schools Begin Jan. 5

THE OIL HEAT INSTITUTE of New England is opening Group II of its service schools on Jan. 5. Classes are scheduled to be held in Fall River, Mass., on Mondays; in Providence, R. I., on Tuesdays; Brockton, Mass., on Wednesdays; Worcester, Mass., on Thursdays; and Natick, Mass., on Fridays. Subjects to be covered are:

► Weeks of Jan. 5 and 12 — Servicing low pressure oil burner controls and residential summer air conditioning controls, General Electric Co.

► Weeks of Jan. 19 and 26, Feb. 2 — Residential heating

(Continued on page 74)

Coming Events

January

Jan. 17-22 — National Association of Home Builders, annual convention and exposition. Conrad Hilton Hotel, Chicago. Daniel Grady, convention chairman, 1625 L St., N. W., Washington 6, D. C.

Jan. 20-21 — Carolinas Roofing and Sheet Metal Contractors Association, midwinter annual meeting and roofing and sheet metal forum. North Carolina State College, Raleigh, N.C. H. J. Stockard Jr., executive secretary, Box 408, Raleigh, N.C.

Jan. 26-29 — American Society of Heating and Air-Conditioning Engineers, 65th annual convention. Bellevue Stratford Hotel, Philadelphia. A. V. Hutchinson, executive secretary, 62 Worth St., New York 13.

Jan. 26-29 — International Heating and Air-Conditioning Exposition, Commercial Museum, Philadelphia. E. K. Stevens, exposition manager, International Exposition Co., 480 Lexington Ave., New York 17.

February

Feb. 2-5 — Washington University college short course, St. Louis, Mo. Erwin C. Hoelscher, associate professor, Mechanical Engineering Dept., Washington University, St. Louis.

Feb. 5-6 — Sheet Metal and Warm Air Heat-

ing Contractors' Association of Indiana, annual convention. Antlers Hotel, Indianapolis. J. W. Ridgway, president, 53 W. Meredith, Frankfort, Ind.

Feb. 9-11 — New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, annual convention. Arlington Hotel, Binghamton. Clarence J. Meyer, executive secretary, 569 Genesee, Buffalo 4.

Feb. 12-14 — Sheet Metal and Roofing Contractors' Association of Minnesota, annual convention. Radisson Hotel, Minneapolis. Ray Kraus, convention chairman, General Sheet Metal Corp., 508 S. 7th, Minneapolis.

Feb. 16-19 — Annual Industrial Ventilation Conference. Kellogg Center, Michigan State University, East Lansing, Mich. James C. Barrett, Michigan Department of Health, Lansing 4, Mich.

March

Mar. 2-4 — Ohio Sheet Metal Contractors' Association, annual convention. Mayflower Hotel, Akron. Harry Liberman, general chairman, 580 Wooster, Akron.

Mar. 9-11 — Sheet Metal Contractors' Association of Wisconsin, annual convention. Hotel Schroeder, Milwaukee. Robert S. Schmieder, executive secretary, 8320 W. Bluemound Rd., Milwaukee.

(For additional Coming Events see page 74)



HOW STAINLESS STEEL INVENTORY PROBLEMS CAN BECOME PROFIT OPPORTUNITIES

The difference between profit and loss in many manufacturing operations is often times the difference between raw material supplies and production scheduling. Too little stock results in expensive downtime. Too much inventory means excessive costs in holding and handling—the cost of possession—which can reduce your profit margin.

Ordering Republic ENDURO Stainless Steel from your stainless steel distributor releases

inventory capital for other business needs.

Further, your stainless steel distributor can provide you with expert advice in solving machining and metallurgical problems. Findings of Republic specialists in these fields are available to you through him. Call your nearest Republic Stainless Steel Distributor — your Steel Service Center — listed below, next time you need stainless steel. He's only as far away as your telephone.



REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

CALL YOUR REPUBLIC ENDURO® STAINLESS STEEL DISTRIBUTOR

ALABAMA

Atlantic Steel Company,
Birmingham,
Reynolds Aluminum Supply Company,
Birmingham,
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Birmingham.

ARIZONA

Ducumun Metals & Supply Co.,
Phoenix.

ARKANSAS

Hammond Steel Metal Company,
Fort Smith,
Little Rock.

CALIFORNIA

Ducumun Metals & Supply Co.,
Berkeley 10,
Los Angeles 54,
National City,
Allen Fry Steel Company,
Los Angeles,
E. M. Jorgensen Company,
Los Angeles 54,
Oakland 23.

COLORADO

Marsh Steel Corporation,
Denver 16.

CONNECTICUT

Edgcomb Steel of New England,
Incorporated,
Milford.

FLORIDA

Cavley Steel and Supply
Company,
Fort Lauderdale,
Miami,
Orlando,
Eagle Roofing and Art Metal
Works, Inc.,
Tampa,
Reynolds Aluminum Supply Company,
Miami,
J. M. Tull Metal and Supply Co., Inc.,
Jacksonville,
Miami,
Tampa.

GEORGIA

Atlantic Steel Company,
Atlanta 1,
Reynolds Aluminum Supply Company,
Atlanta 1,
Savannah,
J. M. Tull Metal & Supply Co., Inc.,
Atlanta 2.

IDaho

Pacific Metal Company,
Boise.

ILLINOIS

Chicago Steel Service Company,
Chicago 32.

INDIANA

Hubbell Metals, Inc.,
Indianapolis 2,
Ohio Valley Hardware & Roofing
Company,
Evansville.

KANSAS

Marsh Steel Corporation,
Wichita.

KENTUCKY

Reynolds Aluminum Supply Company,
Louisville,
Williams and Company, Inc.,
Louisville 3.

LOUISIANA

Marsh Steel Corporation,
Baton Rouge.

MARYLAND

Hill-Chase Steel Company of
Maryland,
Baltimore 3.

MASSACHUSETTS

Hawbridge Brothers Company,
Boston 10.

MICHIGAN

Muron Steel Company,
Detroit 16.

MISSOURI

Hammond Sheet Metal Company,
St. Louis 5,
Hubbell Metals, Inc.,
Kansas City 16,
St. Louis 3,
Marsh Steel Corporation,
North Kansas City 16.

NEW HAMPSHIRE

Edgcomb Steel of New England, Inc.,
Nashua.

NEW JERSEY

Abarry Steel Company,
Perth Amboy,
Atlas Steel Supply Company,
Morris Plains,
Benedict-Miller, Inc.,
Lyndhurst,
International Corporation,
Hillside,
Miller Steel Company, Inc.,
Hillside.

NEW YORK

Atlas Supply Company, Inc.,
Bronx 38,
Beals, McCarthy and Rogers, Inc.,
Buffalo 5,
Brace-Mueller-Huntley, Inc.,
Buffalo,
Rochester,
Syracuse,
Bruce and Cook, Inc.,
New York 38,
Eastern Metals Warehouse, Inc.,
Albany,
Ernst Iron Works,
Buffalo,
Palmabee Metals Corp. of New
York,
Rochester,
Hamley, Inc.,
Brooklyn 32,
K. & S. Metal Supply, Inc.,
Long Island City,
Metal Purchasing Company, Inc.,
New York 1.

NEW YORK (Cont.)

Schwartz and Cohn, Inc.,
Brooklyn.

NORTH CAROLINA

Metal Service Corporation,
Charlotte,
Reynolds Aluminum Supply Company,
Raleigh,
Vance Iron and Steel Company,
Charlotte.

OHIO

The Ohio Metal & Manufacturing
Co.,
Dayton 2,
Varrs Brothers, Inc.,
Columbus 8,
Williams and Company, Inc.,
Cleveland 14,
Cincinnati 29,
Columbus 8,
Toledo 12.

OKLAHOMA

E. M. Jorgensen Company,
Tulsa.

OREGON

American Steel Warehouse
Company,
Portland 14,
Pacific Metal Company,
Portland 9.

PENNSYLVANIA

Hill-Chase and Company, Inc.,
Philadelphia 34,
Potts-Farrington Company,
Philadelphia 29,
Horace T. Potts Company,
Philadelphia 34,
The Warren Company,
Erie,
Williams and Company, Inc.,
Pittsburgh 33.

RHODE ISLAND

Edgcomb Steel of New England,
Inc.,
Pawtucket.

TENNESSEE

Hubbell Metals, Inc.,
Memphis,
Reynolds Aluminum Supply Company,
Memphis,
Nashville,
Siskin Steel and Supply Company,
Incorporated,
Chattanooga,
Vance Iron and Steel Company,
Chattanooga.

TEXAS

E. M. Jorgensen Company,
Dallas,
Houston.

UTAH

Structural Steel and Forge
Company,
Salt Lake City,
ZCMI Wholesale Distributors
Salt Lake City.

VIRGINIA

Dominion Culvert and Metal
Corporation,
Roanoke 5,
Reynolds Aluminum Supply Company,
Richmond.

WASHINGTON

Pacific Metal Company,
Seattle.

CANADA

Drummond McCall and Company,
Ltd.,
Toronto, Ontario
Montreal, Quebec

WITH THE ASSOCIATIONS

(Continued from page 72)

Coming Events

(Continued from page 72)

March

Mar. 19-20 — Michigan Heating & Sheet Metal Association, annual convention. Fort Shelby Hotel, Detroit. N. J. Biddle, executive secretary, 3035 E. Grand Blvd., Detroit 2.

Mar. 19-21 — Southeast Trade Exposition sponsored by Sheet Metal, Roofing, Heating, Air Conditioning Contractors' Association of Georgia. Atlanta Biltmore Hotel, Atlanta. B. L. Noblitt, executive secretary, 208 Red Rock Bldg., Atlanta 3.

April

Apr. 7 — Annual convention, National Warm Air Heating and Air Conditioning Association of Canada. Seaway Hotel, Toronto. D. M. W. Wilson, managing director, 4195 Dundas St., W., Toronto 18.

Apr. 10-11 — Sheet Metal Contractors' Association of Illinois, annual convention. Abraham Lincoln Hotel, Springfield. Jay E. Harms, secretary, 1619 N. Sheridan Rd., Peoria, Ill.

Apr. 17-18 — Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, annual convention. Castleton Hotel, New Castle, Pa. E. W. Liebermann, secretary, 1411 Merchant St., Ambridge, Pa.

Apr. 24-26 — Roofing and Sheet Metal Contractors' Association of Florida, annual convention. Biltmore Hotel, Palm Beach, Fla. Victor Kinsey, president, 1517 N. Poinsettia, West Palm Beach, Fla.

Apr. 29-May 4 — Oil-Heat Institute, annual convention. Olympic Hotel, Seattle, Wash. R. H. L. Becker, managing director, 500 5th Ave., New York 36.

May

May 4-6 — Air-Conditioning and Refrigeration Institute, annual meeting. The Homestead, Hot Springs, Va. George S. Jones, Jr., managing director, 1346 Connecticut Ave., N. W., Washington 6, D. C.

May 28-30 — Sheet Metal and Air Conditioning Contractors' National Association, Inc., annual convention. Broadmoor Hotel, Colorado Springs, Colo. J. D. Wilder, executive secretary, 170 Division St., Elgin, Ill.

controls. Zone control and electronic controls, Minneapolis-Honeywell Regulator Co.

► Week of Feb. 9 — High pressure oil burner servicing, The Carlin Co.

► Week of Feb. 16 — Servicing wet heat systems, Taco Heaters, Inc.

► Week of Feb. 23 — Installing and servicing fuel oil pumps, ignition transformers and delayed opening valves, Webster Electric Co.

► Week of Mar. 2 — Rotary Oil Burner Installation and Adjustment, Silent Automatic Products.

► Week of Mar. 9 — Fuel Oil Additives, Gulf Oil Corp.

These courses are presented from a purely service standpoint, with the subject matter each year being chosen by the previous year's students.

Further information regarding the course may be obtained from Hollis L. Farrow, director of education, Oil Heat Institute of New England, 839 Beacon St., Boston 15, Mass.

Camitsch Goes to St. Paul Association

THE AIR CONDITIONING & Heating-Roofing & Sheet Metal Association of Minneapolis, Inc., recently held a special farewell meeting for Howard Camitsch. Mr. Camitsch became executive secretary of the St. Paul Association on November 1. In appreciation of his work for the Minneapolis association since it was founded in 1953, the membership presented him with an antique model automobile and a portable TV set.

Indiana Convention to Feature Show

THE SHEET METAL AND WARM AIR HEATING Contractors' Association of Indiana is planning a product and equipment show in conjunction with its 41st annual convention scheduled for Feb. 5-6 at the Hotel Antlers, Indianapolis. This will be the first combination convention and show that this group has held in over 20 years.

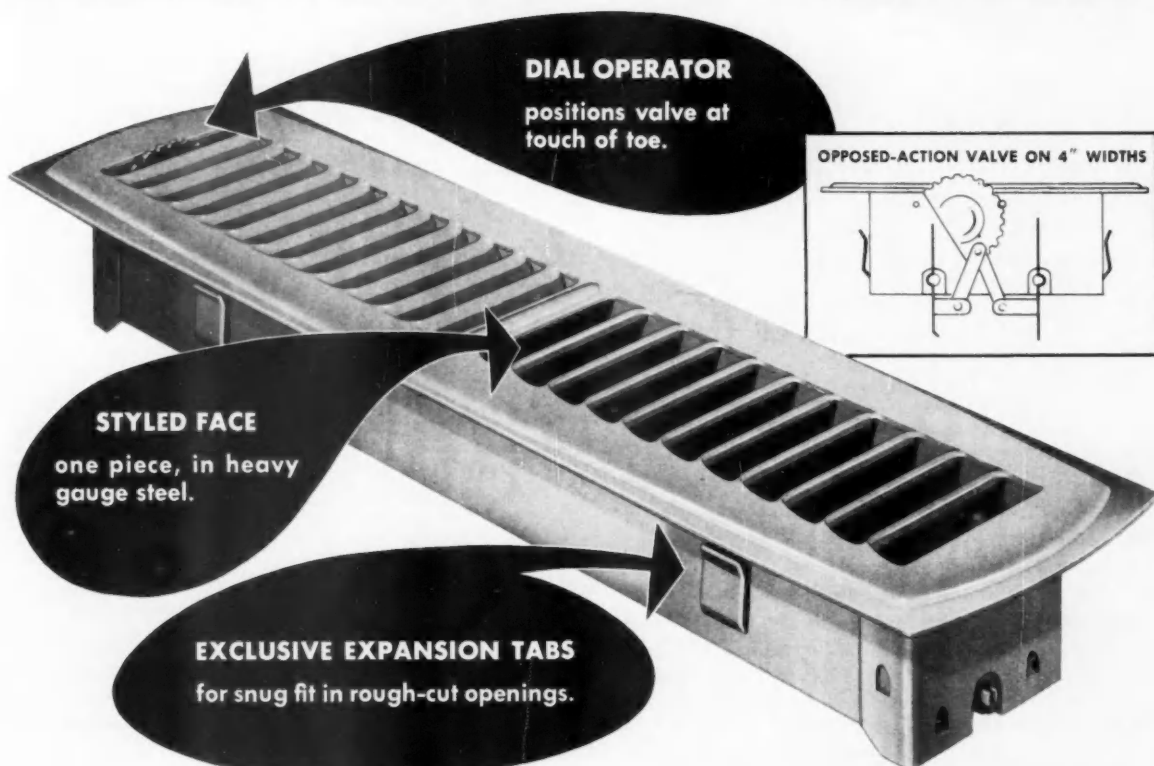
Manufacturers are invited to take part in the show which will occupy 22 booths in the hotel's exposition hall adjoining the ballroom where convention sessions will be held.

The two-day convention will be devoted to creative selling and will cover sales techniques and sales promotion ideas to help heating and sheet metal contractors to increase their sales volume and make more profitable sales. Dealer-contractors and wholesalers will take part in the convention program, presenting selling ideas by panel discussion and short skits.

Additional information can be obtained from Sheet Metal and Warm Air Heating Contractors' Association of Indiana, 1414 E. Southport Rd., Indianapolis, Ind.

Air Controls NEW No. 150

THE ECONOMY FLOOR DIFFUSER
with **FEATURES** not found in the most expensive models



PLUS

- ✓ **Factory-set vanes**, easily adjustable for special requirements.
- ✓ **Adjusto-Stop** for balancing system at diffuser face.
- ✓ **Special tension spring** on valve for rattle-free operation — double, opposed-action valve on 4" widths.
- ✓ **Locked volume** setting for schools or commercial installations.
- ✓ **Long-wearing finish** — Sierra-Brown enamel baked onto phosphatized surface for maximum adherence and durability.

FREE SAMPLE ON REQUEST — also newly revised catalog — just write us on your letterhead and include name of your wholesaler.

In Canada: LEIGH METAL PRODUCTS LTD., 72 York St., London, Ontario



AIR CONTROL PRODUCTS, INC.

158 Center Street, Coopersville, Michigan

**Low
Price
\$2.25 list**

12" x 2 1/4" size

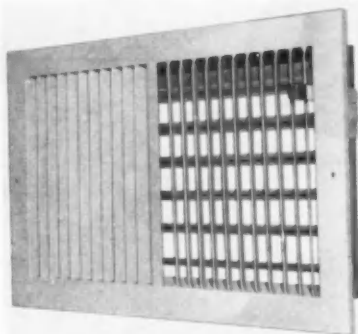
Four other popular
sizes up to \$2.95

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available, see this month's New Literature department

Year 'Round Registers

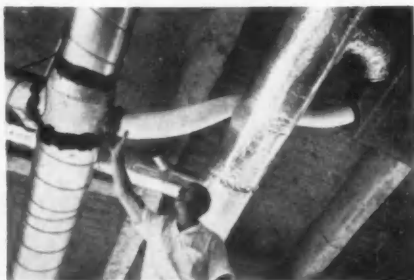
SERIES 120 REGISTERS with multi-louver valve and one-piece face construction, designed for year 'round air conditioning systems—*Air Control Products, Inc.*,



Dept. AA, 157 Center St., Coopersville, Mich. Unit provides for quick raising or lowering of air pattern. Free area and strength are increased by one-piece face construction with $\frac{1}{2}$ in. wide stamped fins, the company states. Fins are pre-set 30 deg out from center of face and can be adjusted to provide any horizontal pattern. Operator handle controls air pattern vertically. Valve can be opened to pre-determined setting.

Flexible Air Duct

CRUSH AND puncture-resistant flexible air duct made of aluminized asbestos cloth and steel spirals—*Wire-mold Co., Dept. AA, Hartford 10, Conn.* Designed for high and low velocity air conditioning systems, ducts



are restorable to original shape if damaged or compressed. "Asbeston" fabric is protected by laminated, polyester-reinforced aluminum foil vapor barrier. Metal is galvanized steel spiral. Features are: low friction loss, absence of odor under operating temperatures, acid and oil resistance. Ducts are in lengths to 20 ft, inside diameters from 3 to 12 in.

Electronic Air Filter Cleaner

"DAX" TYPE X detergent-adhesive system for cleaning and adhesive application on electronic air cleaners—*Electro-Air Cleaner Co., Inc., Dept. AA, Olivia and Sproul Sts., McKees Rocks, Pa.* Mixed with wash water, solution washes collecting cells, then dries, leaving adhesive coating on collecting plates and elec-



trodes. Applicator system works with vertical traveling washing systems or with horizontal fixed washing systems. Soapy emulsion dissolves grease and cuts dirt. Tacky residue holds collected dirt. System is said to reduce maintenance costs, eliminate arcing and voltage leaks caused by dirt accumulation, and keep drain pans and ducts clean.

Furnace Humidifier

"CLIMATIZER" ELECTRIC humidifier for warm air furnaces—*Keeney Mfg. Co., Dept. AA, Newington, Conn.*



Built-in heating element produces vapor which rises directly into air stream; no evaporation plates are

YOU HAVE

"Greater Job Coverage"

WITH

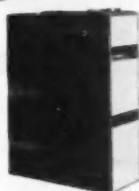
MONCRIEF

THE COMPLETE LINE FOR

High-Profit Installations!

ON EXHIBIT

January 18th-22nd
N.A.H.B. (Home Builders) Show
Spaces 756, 757, 775, 777, Chicago Coliseum
January 26th-29th, International Heating
& Air Conditioning Exposition
Spaces 26, 28, 49, Convention Hall
Philadelphia



Winter Air
Conditioner
with enameled
Return Air
Cabinet (an
accessory).



Oil Counterflow
Unit, showing
complete Factory
Assembly



Winter Air
Conditioner
with Plenum
Type Cooling
Coil

Widely imitated but still unmatched, the Moncrief Winter Air Conditioners illustrated above are completely assembled and wired at the factory. They have the substantial construction of 14- and 16-gauge Heat Exchangers and 21-gauge cabinets. Gas Fired Upflow and Counterflow Units are available with capacities of 75,000, 100,000, 125,000 and 150,000 Btu Input. Oil Fired Units have 78,400 and 112,000 Btu Output capacities in Upflow and Counterflow Models, and 78,400 Btu in the Counterflow Model.

For New Homes or Old House Jobs . . . the Right Furnace or Air Conditioner . . . at the Right Price!

Here is sales power that can make a real difference in your capacity to attract business, and in your ability to make money from the jobs that you install.

Gas, Oil or Coal Furnace; Upflow, Counterflow, Basement or Horizontal Unit; Complete Combination Year 'Round Air Conditioner; Air or Water Cooled Summer Air Conditioner; Gas Unit Heater; Gas, or Oil, Conversion Burner — every Moncrief Unit is manufactured to a high standard of quality that has been unsurpassed for more than 60 years!

And every Moncrief Unit carries a uniformly competitive price that permits you to bid excellence against less desirable design and construction!

Call your Moncrief Wholesaler, now!



Gas or Oil
Fired Winter
A. C. Units



Gas or Oil
Fired Utility
and Counter-
flow Winter
A. C. Units



Gas or Oil
Fired Gravity
Furnaces



Horizontal
Furnaces
4 Gas Sizes
4 Oil Sizes



Gas Duct
Furnaces
4 Sizes



Gas Fired
Unit Heaters
5 Sizes



Gas
Conversion
Burners



2, 3 or 5 H.P.
Air or Water
Cooled, Gas
or Oil Fired,
Year 'Round
A. C. Units



3 or 5 H.P.
Water Cooled
Summer
A. C. Units



2, 3 or 5 H.P. Air
Cooled Summer
A. C. Units with
choice of "Circular"
(Upflow) or "Flat"
(Horizontal Flow)
Cooling Coils

THE HENRY FURNACE COMPANY • Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

MONCRIEF

FURNACE PIPE AND FITTINGS

Don't let this trouble... come between you and your profits



Model 414 Jet-Dri
economy drier features
PA 400 silica gel

Outstanding desiccant used in Jet-Dri adsorbs up to 98% more moisture than older type silica gels. PA-400 also removes and prevents formation of harmful acids that corrode iron, copper, brass and aluminum. No chemical reaction in refrigeration system. Constructed with brass fittings ($\frac{1}{4}$ " S.A.E. male flare connections). Flow in either direction.



Model 408 Trap-It
—has hundreds of
diamond-shaped
filtering tunnels

Every drop is filtered again and again. Has many times the filtering and absorbing area of an ordinary filter. May be used with any make expansion or solenoid valve. Three sizes: $\frac{1}{4}$ or $\frac{3}{8}$ " fittings on the regular and large sizes and $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ " fittings on the extra large. S.A.E. male flare inlets and outlets.

Head off dirt, moisture and acids with A-P drier-filter-strainers... You'll be money ahead in reduced service costs

We're not just making a mountain out of a molehill — this heavy deposit of dirt, scale and solder particles was found in a Trap-Dri filter-strainer after only 45 days' use. Such impurities along with moisture and harmful acids are a major cause of imperfect valve operation... a situation that results in costly callbacks, downtime and valve repairs.

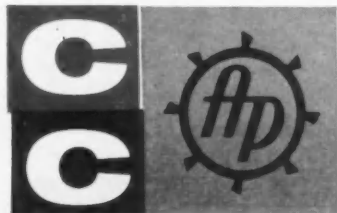
You can protect expansion valves and your service profits by installing the proper drier or filter from A-P's complete line of Jet-Dris, Trap-Dris and Trap-Its. Hook one up ahead of old or new valves... it's your assurance of smooth valve operation and freedom from freeze-ups and corrosive acid formation.



Model 410 Trap-Dri
assures 100%
acid removal plus
complete moisture
adsorption

Exclusive honeycomb depth filter combined with PA 400 silica gel — filters out dirt as small as 5 microns. Water and acids adsorbed physically, with no release of any harmful substance to refrigerant circuits... no appreciable pressure drop. Units hermetically sealed with plastic caps. Refillable drier available in large sizes. Flare and solder types — $\frac{1}{3}$ to 12-ton capacities. Write for data on "Twin" Trap-Dri for large capacity jobs.

WRITE TODAY for latest application data on new, improved Jet-Dri, Trap-Dri and Trap-It plus specs.



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Manufacturers of A-P CONTROLS

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COOKSVILLE, Ontario • NIJMEGEN, Holland

Controls That Make Modern Living Possible

equipment developments

Continued

used. Float switch with enclosed rocker magnet actuates a solenoid valve and controls water level in aluminum body. Perforated cover prevents dirt accumulation, holding microscopic particles in colloidal suspension until exhausted in vapor escaping through holes. Model 250 is wired to operate when blower is on. Model 251 has electric plug for continuous operation.

Mechanical Draft Fans

HEAVY DUTY, adjustable draft fans in four models to fit smoke pipes from 6 to 10 in., deliver from 125 to 500 cfm—*McLarty Systems, Dept.*



AA, 2600 Dickman Rd., Battle Creek, Mich. Precision-balanced fans have deep fin-cooled chassis to protect against burnout. Tube axial fans permit fitting pipe close around fan blade for improved draft boosting, the company reports.

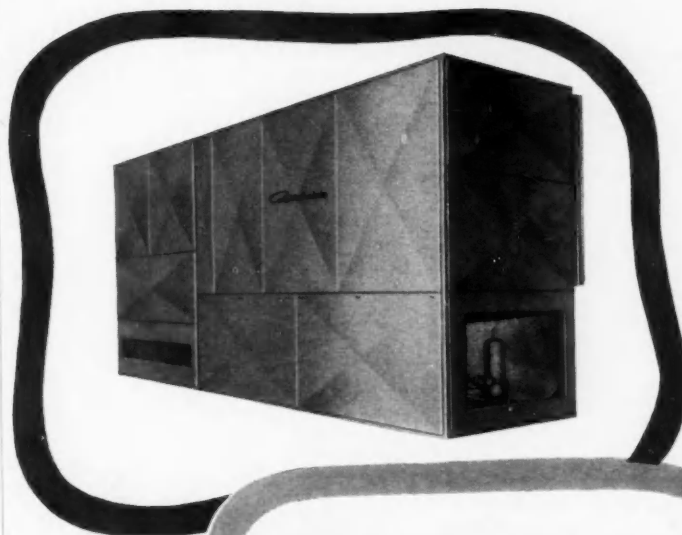
Bench Shear

No. 39 bench shear which cuts flats, angle iron, rounds and bar stock without changing dies or cutting blades—*Whitney Metal Tool Co., Dept. AA, 110 Forbes St., Rockford, Ill.* Mild steel capacities are $\frac{1}{8}$ in. angle iron, 10 ga flat stock, $\frac{7}{16}$ in. round bar cutoff, and $\frac{3}{16}$ in. \times 2 in. flat bar stock. Roller bearings at hinge points ease shearing operation. Frame is formed from $\frac{1}{2}$ in. plate. Unit is $7\frac{5}{8}$ in. tall, 10 in. long and 4 in. wide. Handle is 30 in. Unit weighs 18 lb. Bench mounting brackets and adjustable work holddown are included.

For Unmatched Flexibility National - U.S.

Central Station

Packaged Air Conditioning



7½-60 h. p.

water-cooled
or
evaporative condenser

Water-cooled or evaporative condenser models in nine sizes from 7½ to 60 h.p. provide a selection from which a combination can be arranged to fit any particular situation. Each model is available in different arrangements, matched to meet any space requirements.

All units are completely engineered and packaged—require only power, ductwork and water supply connections for quick installation. And, all are factory pre-tested to minimize performance testing time.

Write today for Form AC-1001 describing the new Capitolaire Central Station Packaged Air Conditioning System, or contact your nearest National-U.S. representative. He'll be glad to help you.



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HEATING AND AIR CONDITIONING DIVISION
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58-21

The BEST LOW COST Automatic Humidifier For Project Jobs!



Model P-10 with 5
Evaporator Plates
and all fittings

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AUTOMATIC HUMIDIFIERS

First in

- SIMPLICITY
- EFFICIENCY
- ECONOMY

- LOW COST
- TROUBLE FREE
- QUICKLY INSTALLED

- Unbreakable Glass Fiber Evaporator Plates with Rustproof Drain Clips—Faster Evaporation
- No Float Adjustments—Foamglas moisture-proof Cells give Peak Floating Efficiency
- One Model Fits all Furnaces, all Water Pressures, from 5-175 lbs. without Adjustments

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Please give me full particulars on new Model P-10 Fairway Automatic Humidifiers.

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Address _____

City _____ Zone _____ State _____

equipment developments

(Continued)

Water Heater Controls

MODELS V5130 AND V5131 water heater thermostats with or without factory-mounted pressure regulators—Minneapolis-Honeywell Regulator Co., Residential



Div., Dept. AA, 2747 Fourth Ave. S., Minneapolis, Minn. Built-in pressure regulator is said to eliminate need for separate piping between regulator and control device. All settings and temperature indicators are on top of the controls for convenience in adjusting. Also available are Models C590 gas-cock "Pilotstat" with pressure regulator, V5150 gas-cock safety control with snap-action remote bulb thermostat; and V8149 24-v manifold.

Gas-Fired Furnaces

"J-LINE" MODELS FVB gas-fired furnaces designed for installation as either highboys or lowboys, requiring 4 ft 8 in. headroom for furnace and ducts—Janitrol



Heating & Air Conditioning Div., Surface Combustion Corp., Dept. AA, 400 Dublin Ave., Columbus 16, O. Units range from 80,000 to 100,000 Btu inputs. Features include: sides and back die formed from single sheet of steel; all-welded "Multi-Thermex" heat exchangers; two-pass internal air flow of low resistance; suspended, rubber-cushioned blower assembly;

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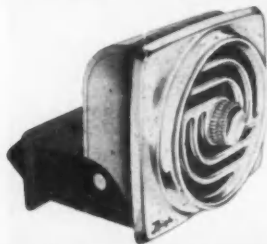
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YOU CAN DO THE WHOLE JOB— CAN MAKE THE WHOLE PROFIT!



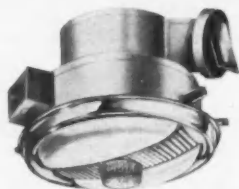
You run the ductwork — why not sell and install the ventilating fan as well? You'll make extra profit in about the same time.

SELL AND INSTALL

Leigh VENTILATING FANS

EASY TO SELL — They're loaded with sales-building features — beautiful grilles, triple-chrome plated — automatic draft-proof shutters — five-year guarantee.

COMPLETE LINE — Many more than the two shown here — models for kitchen, bathroom, recreation room — ceiling or wall installation. Range hoods, too. Everything for every sale.



Bathroom fan/light combination

WRITE for catalog and prices — complete illustrations, specs, installation diagrams.



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158 Lee Street

Coopersville, Michigan

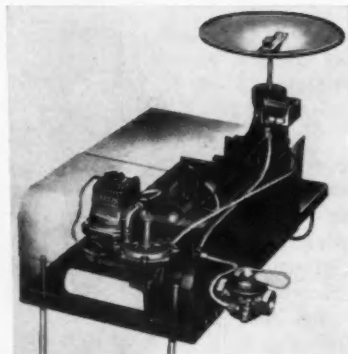
equipment developments

(Continued)

permanent split capacitor blower motor; glass fiber insulation around heat exchanger compartment.

Gas Conversion Burners

"LUXAIRE" GAS conversion burners with heating capacities of 50,000 to 310,000 Btu input, in three models—C. A. Olsen Mfg. Co., Dept. AA, Filbert St.,



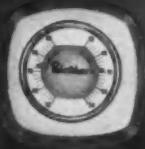
Elyria, O. Burners feature restyled cabinets with rounded duct covers, charcoal grey enamel finish and rigid 14 ga steel bases. Entire burner head-tube and pilot assembly can be removed without disturbing gas manifold. Semi-circular secondary air shutter permits increased control over combustion air and draft. Stainless steel flame spreader provides wider dispersion of heating flame. Controls are self-generating; mounting and leveling legs are adjustable. Burner head-tube is cast iron.

Roof Ventilator-Skylight

"LITE-N-AIRE" COMBINATION high capacity gravity roof ventilator and skylight, with translucent glass fiber dampers and gutters which admit natural light—Swartwout Co., Dept. AA, 18511 Euclid Ave., Cleveland 2, O. Each 7½ × 10 ft unit has 30 sq ft of free air opening; overall height is 21½ in. Fusible link mechanism parts when temperatures exceed 212 F, automatically opening dampers to vent fire, smoke and gases outdoors.

Carbon and Grease Remover

"POW-A-KIT" CONCENTRATED powder degreaser designed to loosen carbon, grease, tar, gum and sludge from filters, nozzles, strainers, electrodes and other small parts—Stewart Hall Chemical Corp., Dept. AA, P. O. Box 66-T-43, Mt. Vernon, N. Y. Powder will not harm metal, plastic or rubber, and is non-flammable and non-corrosive. Solution is said to loosen heavily encrusted carbon deposits from electrodes in 15 minutes. Product is available in 1 qt size kit with



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double heat anticipa-
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night life.



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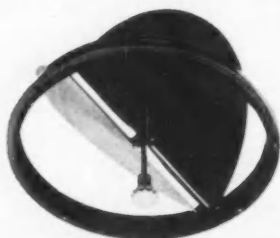


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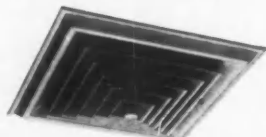
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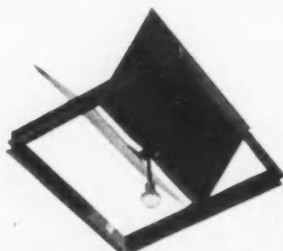
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GREATEST FREE AREA — Stepped Down and FLUSH
Deep Wide Anti-Smudge Ring. Gasket Sealed.



No. 1800 Round Damper. Knob-operated Knob
is removable for Permanent Setting.



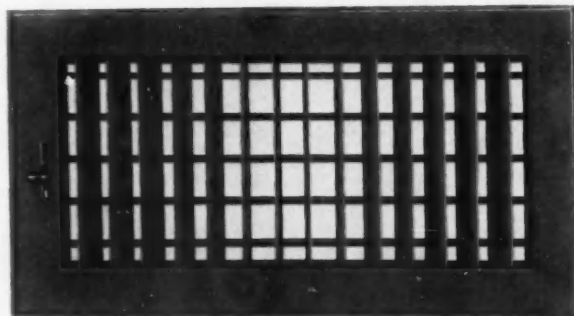
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IMUM FREE AREA. STEP-DOWN and Flush. Deep
Wide Outer Section Gasketed.



No. 2800 SQUARE CEILING DAMPER

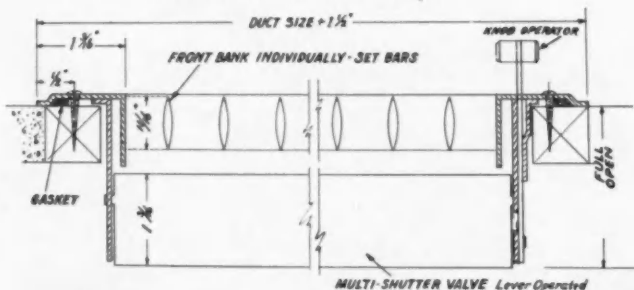
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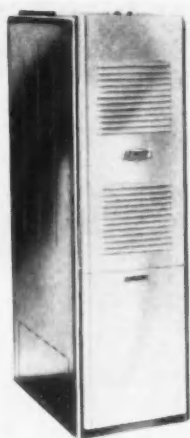
equipment developments

Continued

dipping basket and in 1 qt combination kits which also include extra 5 oz refill can.

Gas-Fired Furnaces

GH SERIES of gas-fired forced air furnaces designed especially for utility room installation—*Lennox Industries Inc., Dept. AA, 200 S. 12th Ave., Marshalltown, Ia.* Features are: inner liner to insulate cabinet and



provide proper air flow during combustion; steel heat exchanger; gas-tight flue connection which moves freely with temperature changes; "floating" blower and "hammock" filter. Counterflow units and models with three-speed direct drive blowers are featured. Inputs range from 80,000 to 225,000 Btuh.

Ignition Transformer

"ADAPTO" ignition transformer with three sets of terminals, each in a different position, to fit most standard burners—*Thermolok Mfg. Co., Inc., Dept. AA, 1099 Tulip Ave., Franklin Sq., L.I., N.Y.* It eliminates temporary hookups, takes standard fittings and requires single service call for transformer replacement.

Heat-Resistant Paint

"HEAT-REM QD BLACK" quick-drying, heat-resistant paint for use on

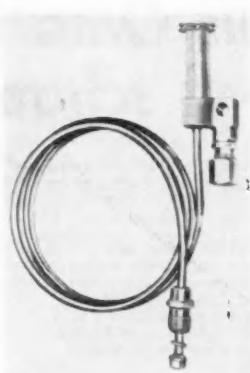
surfaces subjected to temperatures up to 600 F—*Speco, Inc., Dept. AA, 7308 Associate Ave., Cleveland 9, O.* Said to dry to tough bright finish in less than 2 hr, paint requires no special baking and has no objectionable odor during application. It resists extreme temperature variations, smoke, moisture, fumes, mild industrial acids and alkalis. Applied by brush or spray, paint covers about 500 sq ft per gal. It is in quart, gallon, 5 and 50 gal containers.

Metal Fastener

"SKREW-SET" fastener designed to connect light-gage metal—*Ramset Fastening System, Winchester-Western Div., Olin Mathieson Chemical Corp., Dept. AA, 12117 Berea Rd., Cleveland 11, O.* Typical applications are: fastening pre-drilled straps to air ducts, connecting under-floor duct header straps to steel decking; and securing metal ducts and inside wiring clips to metal partitions. Fastener, attached to "Shure-Set" tool, drives through material and is tightened by turning the tool.

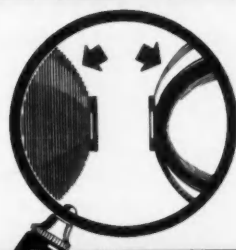
Pilot-Thermocouple

PILOT-THERMOCOUPLE combination, rated at 400 Btuh input for water heaters and gas-fired heating equipment—*Robertshaw-Fulton Controls Co., Dept. AA, 911 E. Broad St., Richmond 19, Va.* Non-aerated de-



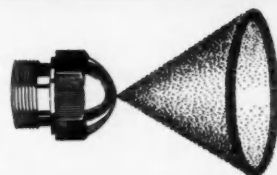
sign is said to eliminate possibility of clogging with lint. Large diameter hood spreads gas over greater area. Tube width is 1/2 in.; length of side inlet model is 1 1/8 in.; bottom inlet

WHY STEINEN?



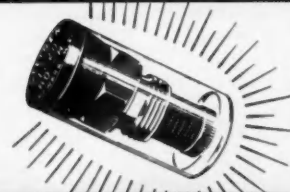
STEINEN OIL BURNER NOZZLES

Compare with other leading makes! Only Steinen with its "mirror" finish tip provides maximum heat deflection and a minimum of gumming and coking.



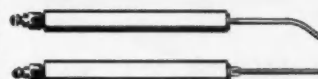
STEINEN OIL BURNER NOZZLES

are tested for volume, angle and spray pattern assuring you micro-atomized spray for more intensified heat.



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are packed in individual plastic containers with clearly marked color coded lids.



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Parsons Const. Co.,
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Nebraska Sheet Metal
of Omaha, heating
contractor.

The installation is typical of the widespread use of SONOAIRDUCT fibre duct by contractors who have found they can save time and labor, without lowering the quality of construction. Duct sizes ranging up to 26" I.D. were used on this job.

Economical SONOAIRDUCT fibre duct is ideal for slab floor perimeter heating or combination heating and cooling systems where duct is encased in concrete. 23 sizes, 2" to 36" I.D., in standard shipping lengths of 18'. Special lengths also available. Meets and exceeds F.H.A. criteria and test requirements for products in this category. Free installation manual. See our catalog in Sweet's.

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- LONGVIEW, TEXAS
- ATLANTA, GA.
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1724

86

equipment developments

Continued

model is 1 in. Two sectional pilot hood is $\frac{5}{8}$ in. in diameter.

Power Press Brake

FIFTEEN TON power press brake for forming, bending, punching, blanking and related operations, with all driving parts located inboard between housings—Niagara Machine & Tool Works, Dept. AA, 637-697



Northland Ave., Buffalo 11, N. Y. Synchronized friction clutch and brake are designed to assure positive, instant ram control. Heavy-duty friction discs can be replaced without disassembling clutch. Features are laminated non-metallic ways; movable foot treadle; enclosed silent worm gear drive; sealed, permanently-lubricated gears; front controlled adjustable speed drive; anti-friction transmission gear, shaft and flywheel bearings; bronze bushed main bearings.

Unit Heater

GAS-FIRED unit heater, rated at 100,000 Btu input, for garages, warehouses, etc.—Roy Hanson Co., Dept. AA, 3326 Elm St., Dallas, Tex. Unit installs anywhere, connects to any natural gas outlet. Eight in. combustion chamber, made from 20 ga steel, has industrial inshot burner and built-in stainless steel gas velocity retarder. Heat radiation unit is standard 6 in. stove pipe with back-draft diverter for outside venting. Frame is heavy gage channel iron. Automatic thermostat controls

AMERICAN ARTISAN, DECEMBER 1958

FRASER-JOHNSTON

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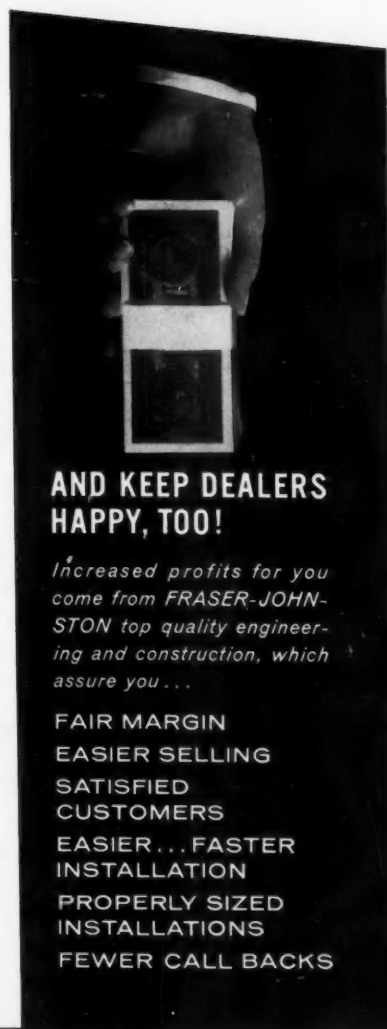


FRASER-JOHNSTON'S basement, upflow, counterflow and horizontal furnaces with matching coils and condensing units make up today's "value line of the air conditioning industry." Write for complete catalog and prices.

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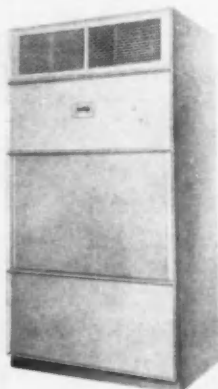
equipment developments

Continued

are available. Overall size is 24 ×
58¾ × 62½ in.

Water Cooled Units

WATER COOLED, self-contained air
conditioners in 3, 5, 8, 10 and 15
ton capacities, featuring square shape
—Typhoon Air Conditioning Co.,
Div. of Hupp Corp., Dept. AA, 505
Carroll St., Brooklyn 15. "Golden



Anniversary Line" features remov-
able, expanded metal return air
grille in face of cabinet, covering
8 sq ft area. Return air can be in-
troduced through back, either side or
front. Other features: reserve power
for heavy loads, copper tube-in-tube
condensers which operate on city
water or cooling tower without
changing circuits. Three smaller
units are 37 × 24½ × 73½ in.;
capacities are 37,000, 60,600, 97,
500, 125,000 and 182,000 Btuh.
Largest model is available with sin-
gle 15 hp compressor or two 7½
hp units.

Cut-to-Fit Filter

"TRIM-TO-SIZE" aluminum air filter
for furnaces and air conditioners—
Research Products Corp., Dept. AA,
1015 E. Washington Ave., Madison
10, Wis. Originally 32 × 40 in.,
filter can be cut to size with scissors
or knife. For larger filtering areas,
filters can be fastened together with
staples, hog rings or aluminum glue,
according to the manufacturer.



AIR VELOCITY METER No. 400



One Instrument
Tells Both
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- Reads directly in feet per minute and inches of water.
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Tests fan and blower dis-
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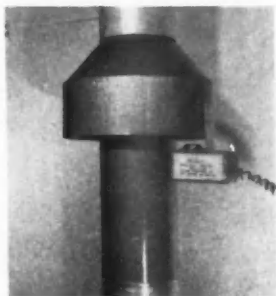
Michigan City, Ind.

equipment developments

Continued

Spillage Switch

"SPILSWITCH," designed to shut off gas burner in heating system when flue products spill from draft diverter into occupied space—*Wilson Industries, Inc., Dept. AA, 3831 Bedford Ave., Brooklyn 29, N. Y.* Spill-



age switch consists of a thermal disc which responds to presence of flue products by closing gas supply and shutting off the burner. Burner must be reset by hand. Switch is positioned at relief opening of draft diverter. Specific models are available for horizontal, vertical and barometric diverters, and for various types of heating installations.

Blower-Coil Unit

"MONCRIEF" air handling units for summer air conditioning, which combine vertically-mounted flat evapo-



rator coil with air distribution motor and blower in same cabinet—*Henry Furnace Co., Dept. AA, Medina, O.* Available in two sizes, units are rated at 34,000 or 55,300 Btuh when operated with 3 or 5 hp "Moncrief" air cooled condensing units. When installed with duct work, intake and discharge ducts are attached to unit; where air is taken directly from or discharged into the room, accessory

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Now he can get a full night's sleep ... thanks to the Metalbestos "Safety System"

"Midnight call-backs" used to cheat this installer out of a full night's rest. He's relaxed now, though, knowing that the "Safety System" protects him ... and his customers ... from these consequences of faulty gas venting:

- * "False leaks" that are actually vent condensation
- * Stale, polluted air from draft hood spillage
- * Pilot failure resulting from carbon-dioxide-loaded vent gases

The Metalbestos "Safety System" puts a permanent end to all these after-hour complaints ... because draft hood spillage and condensation are impossible when an all-Metalbestos vent is designed and installed according to the Metalbestos "Safety System" Gas Vent Tables.

Learn how the Metalbestos Gas Vent Tables simplify installations ... maintain your quality reputation by eliminating wasteful "call-backs." Write Dept. B-12

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Los Angeles,
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METALBESTOS DIVISION
WILLIAM WALLACE COMPANY - BELMONT, CALIF.

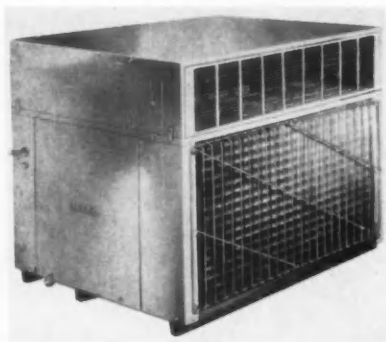
equipment developments

(Continued)

intake and discharge plenums with grilles are used. Discharge grilles diffuse air in virtually any direction.

Condensing Unit

FOUR TON condensing unit for central residential air conditioning systems, with capacity of 49,000 Btuh when remotely connected or close-coupled to a 3 ton "Landmark" evaporator and 51,000 Btuh with 5 ton

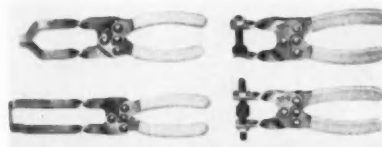


evaporator—Lennox Industries Inc., Dept. AA, 200 S. 12th Ave., Marshalltown, Ia. Model HSA3-40, when in-

stalled with acoustical discharge hood, ejects air high and upward on the same side that it enters; condenser may be placed in corner or built into wall so only inlet-outlet space is exposed. Without acoustical hood, air is discharged from top of unit. Dimensions with hood are $34\frac{1}{2} \times 33\frac{11}{16} \times 59\frac{1}{8}$ in.

Flexible Toggle Clamps

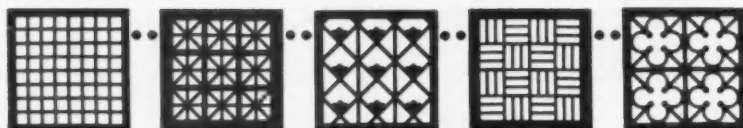
"FLEX-O-MATICS" SERIES of six flexible toggle clamps with and without automatic compensation of material thickness—Detroit Stamping Co., Dept. AA, 350 Mid-



land Ave., Detroit 3. Models 420 and 421 have pre-set 0 in. jaw-gap, requiring no adjustment spindle; models 421-1 and 421-2 combine automatically adjusting flat spring-action with standard screw type spindle assemblies. All four compensate for material thicknesses from pre-set dimension to recommended additional $\frac{3}{8}$ in. jaw-gap. Models 431-1 and 431-2 do not compensate but provide conventional clamping action with up to 350 lb holding pressure. Plastic coatings are avail-

H&K Perforated Metal Grilles and Decorative Sheets

for ventilation, concealment and acoustical purposes



● Plain Lattice

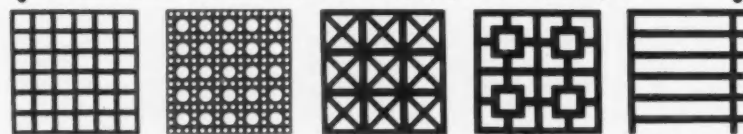
Style L

Style HK720

Style HK111

Style U

● Perforated metal grilles can be ordered from the wide selection of patterns available at H&K. Grilles are made to your exact specifications, in the kind and thickness of metal, size, shape, finish and margins.



Two-Tenths Square

Lincane

Perlex

Style A-1

9/32" x 1-27/32" Slot

● Decorative perforated metal sheets (in lighter gauge steel) are carried in stock for prompt shipment from H&K warehouses. For illustrations of patterns and ordering information, send for H&K Stock List Brochure.

● SEND FOR H&K GENERAL CATALOG for information about H&K perforated metals including louvers (fixed and lip slot).

Above illustrations shown in reduced size

THE **Harrington & King** PERFORATING CO., INC.

Chicago Office and Warehouse
5649 Fillmore St., Chicago 44, Ill.

New York Office and Warehouse
114 Liberty St., Dept. AA, New York 6



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AND A CHECK

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TO

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equipment developments

(Continued)

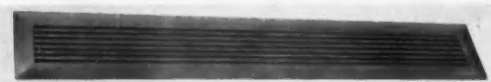
able. Jaws are easily cut, shaped, tapped or altered and may be fabricated from stainless steel, aluminum or other materials.

Heating, Air Conditioning Lines

LINES OF YEAR 'ROUND units, central and window air conditioners and residential heat pumps—York Corp., Subsidiary of Borg-Warner Corp., Dept. AA, Roosevelt Ave., York, Pa. "Comfort Center" packaged furnace and air conditioner features improved electronic air filter, auxiliary air conditioning system that cuts in only during peak periods, and gas burner with



two rows of flame. Units are in highboy models in five capacities and lowboys in three capacities. Heat pumps are air-to-air models, designed as smaller version of previous commercial models. "Medalist," "Citation" and "Metropolitan" room units feature rippled fins and staggered tubes on coil which expose more air to cooling surfaces; compressors are all 1 hp; multi-vaned grilles can be rotated full 360 deg. Central air conditioners are: "Pathfinder" self-contained units with 2, 3 and twin 2 hp compressors; "Twinline" remote model with two complete cooling circuits, having two 1½ hp, two 2 hp or two 3 hp compressors; and "Champion" remote units in air or water cooled models with 10 and 15 hp capacities and two independent cooling systems. Commercial "Embassy" line is in six models from 3 to 22½ hp. Furnaces are in gas- and oil-fired models, designated "Climaster," "Challenger" and "Patrician." Highboy, counterflow, lowboy and horizontal models are available.



Aluminum Extruded Grilles

"AIRLINE" ALL-ALUMINUM extruded grilles, available in one-piece continuous construction up to 12 ft long, for floor, sill and wall applications—Waterloo Register Co., Inc., Dept. AA, P. O. Box 72, Waterloo, Ia. Bar-

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National rings are guaranteed to be round. This means that each and every one is right . . . a quality that works with you to save lost motion and costly fitting time in the shop or on the job site.

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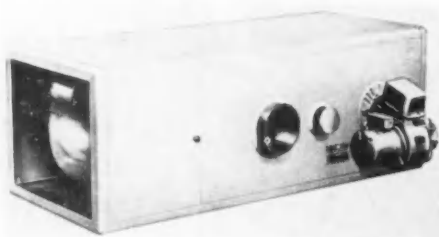
equipment developments

(Continued)

support design involves integral construction of bars and supports incorporating aluminum rods that tie grille work securely to the frame. The $\frac{1}{4}$ in. face bars are on $\frac{1}{2}$ in. centers. Grilles are in eight different types with choice of five border styles. Line includes return or exhaust grilles, supply grilles for sill or floor installation for heating and air conditioning, and side wall grilles.

Oil-Fired Furnaces

"SHAFCONAIRE" OIL-FIRED furnace line for commercial and similar applications, in sizes ranging from 85,000



to 252,000 Btu output—Overhead Heaters, Inc., Dept. AA, 1612 Book Bldg., Detroit 26. Features are built-in

stainless steel combustion chamber, reduced clearances, and adaptability for right or left hand installations in the field.

Pressure Type Fans

TYPE DT pressure type tubeaxial fans for industrial applications, with propeller diameters of 8, 12, 16, 20



and 24 in.—Propellair Div., Robbins & Myers, Inc., Dept. AA, 1345 Lagonda Ave., Springfield 99, O. Propellers are magnesium-aluminum sparkproof alloy. Capacities range from 200 to 12,000 cfm from free air to 5 in. static pressure. Enclosed motors have sealed, pre-lubricated cartridge bearings, can be mounted in

SUCCESSOR TO THE PIPE WRENCH

With the terrific gripping power now offered in the HL 112 plier, the Groove-joint plier now takes the place of, and functions better and easier, than pipe wrenches.

The new Dimalloy Super Groove-Joint plier measures 12 inches overall length. The six groove positions enable the user to grip all sizes of objects up to $2\frac{1}{8}$ inches.

Another fine tool bearing the Diamond Trademark

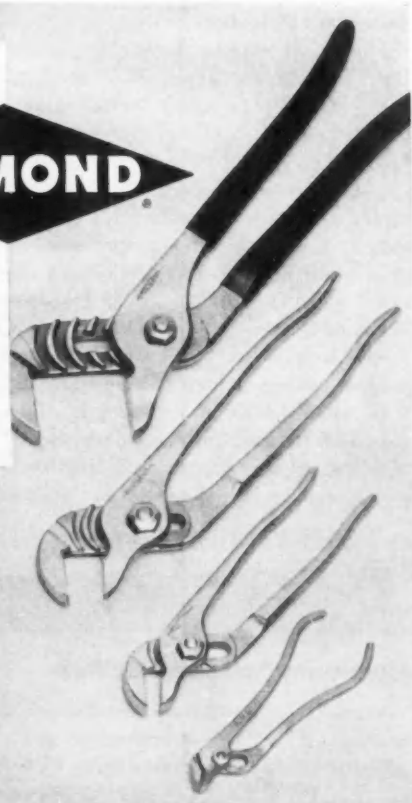
DIAMOND TOOL and Horseshoe Co.

DULUTH - MINNESOTA

Established 1908

TORONTO - CANADA

DIAMOND



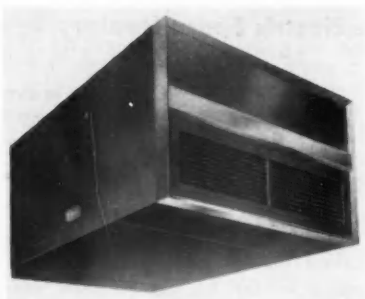
equipment developments

(Continued)

any position. Single phase, polyphase, class B high temperature, and explosion-proof motors are available. Fan bodies are tubeaxial drums of heavy gage rolled steel. Sizes above 8 in. have mounting flanges. Belt-driven motors with gas-tight belt tubes and cast iron bearing housings are also available.

Air Handling Units

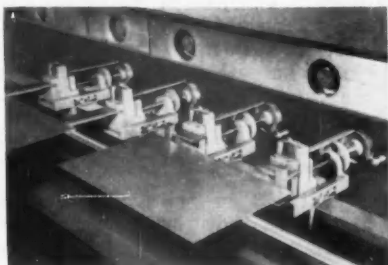
"GOLDEN ANNIVERSARY" line of air conditioning air handling units in 3, 5, 8, 10 and 15 ton capacities with "free-throw" plenum chamber—*Typhoon Air Conditioning Co., Div. of Hupp Corp., Dept. AA, 505*



Carrol St., Brooklyn 15, N. Y. Seamless copper tube coils with bonded helical fins are designed for use with air handling units. Large capacity blowers are designed to overcome air resistance in duct installations. Units may be used with water cooled or air cooled air conditioning installations. Cooling capacities are 37,000, 60,600, 97,500, 125,000 and 191,000 Btuh. All models are 24½ in. high.

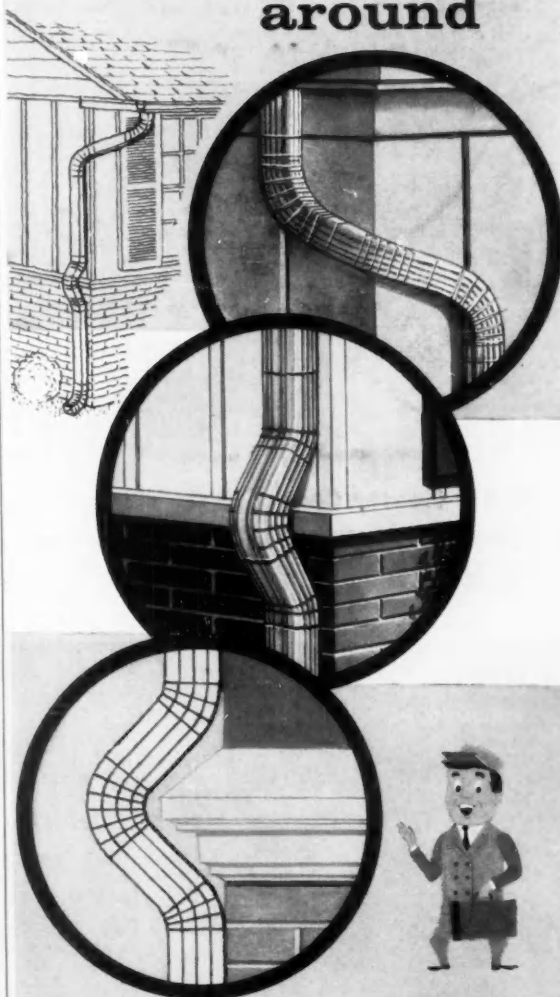
Press Brake Setting Gage

MODEL 800 PRESS BRAKE gage designed to increase safety and permit faster setup and production—*Adresso Mfg. Co., Dept. AA, 9105 W. King St., Frank-*



lin Park, Ill. Horizontal adjustment is made by hand wheel at rear; readings from 0 to 3½ in. are made on scale on right side. Lock nut locks reading. Vertical adjustment, to compensate for die height, is made by

Cincinnati Elbows really get around



Precision shaped and tapered on fully automatic machinery for positive uniformity, Cincinnati Elbows fit together quickly and surely on every installation. Hot-dipping after formation at controlled temperatures gives them a thick coating of zinc for a better-looking, longer-lasting quality. So give the home owner the best. Give him a galvanized, Cincinnati Elbow *not* an unfinished inferior product. Cincinnati Elbows are available in all sizes, angles and gauges in copper, aluminum, stainless or galvanized steel. Ask your jobber.



CINCINNATI ELBOW CO.

4730 Madison Road • Cincinnati 27, Ohio

equipment developments

Continued

raising or lowering front casting and locking with set screw. Casting has a $1\frac{1}{2} \times \frac{7}{8}$ in. slot for holding magnetic sheet stopper. Fast settings are possible for bending sheets up or down, for hook gage for turned down flange and gaging for small flanges and multiple forms. Unit can be applied to any press brake.



Water Heater Controls

"UNITROL" 110, 200 AND 400 gas water heater controls with built-in pressure regulators—Grayson Controls Div., Robertshaw Fulton Controls Co., Dept. AA,

Long Beach 5, Calif. Integrating pressure regulator within control package saves about 60 percent in mounting space, the company reports.

Gravity Roof Ventilator

"VANCO ROOF-LINE" gravity roof ventilators designed to relieve pressure and provide efficient weatherproof ventilation over areas where positive exhaust exists—E. Van Noorden Co., Dept. AA, 126 Magazine St., Boston 19. Low-silhouette unit has outlet opening which is 50 percent greater than inlet, for positive flow of air in rated volume. Aluminum, copper and galvanized units are available in square and rectangular shapes and 11 throat sizes from 12 in. on a side to maximum of 60 in.

Portable Electric Space Heaters

LINE OF BLOWER type space heaters rated from 125,000 to 500,000 Btuh, which plug into ordinary a-c outlet—Aeroil Products Co., Inc., Dept. AA, 69 Wesley St., South Hackensack, N.J. Designed for portability for space heating in different areas, the units are engineered for high volume of air delivery without danger from carbon monoxide gas. Fuel tank is large enough to keep smallest unit running overnight. Units are designed especially for use in partially completed buildings.

PROVEN PERFORMANCE • EASY TO INSTALL



NEW HUDEE AIRE

*(Distributors
and Dealers
now being
selected!)*

AUTOMATIC HUMIDITY CONTROL SYSTEM

Here at last is a truly *practical* automatic humidifier for forced warm air heating systems. Market proven for 3 years... hundreds of installations under all types of conditions. It's easy to install in the furnace plenum... just make a few simple adjustments and you have another satisfied customer. The cost is low (\$49.75 suggested retail)... and so is maintenance (no fins to replace!). Every home with forced warm air is a live prospect. Hudee Aire boosts comfort, promotes health, cuts fuel bills.

WIRE COLLECT or write today for spec sheet, prices and details of distribution and profitable promotion plan.



WALTER E. SELCK and CO.

225 West Hubbard St.
Chicago 10, Illinois

new literature . . .

Oil-Fired Furnaces

SPECIFICATIONS AND DIMENSIONS for "W" and "GO" series oil-fired furnaces are given in an eight page illustrated brochure. Designed for consumer distribution, booklet is printed in full color, features cutaway views of complete units as well as photographs of parts. Also described and illustrated is summer air conditioning equipment which may be added to heating unit at any time—*Stewart-Warner Corp., Heating and Air Conditioning Div., Dept. AA, Lebanon, Ind.*

Building Insulation

INFORMATION on reflective insulation for homes is presented in a 24 page illustrated brochure. Included are an analysis of heat transfer problems, suggestions for preventing moisture damage resulting from condensation in walls and ceilings, and a list of properties of aluminum foil insulation. Also discussed are methods of installing insulation. A cost study covers handling, storage, delivery and application costs of different types of insulation. Copies are priced at 10 cents—*Reflectal Corp., Dept. AA, 200 S. Michigan Ave., Chicago 4.*

Flexible Ducts for Dust Control

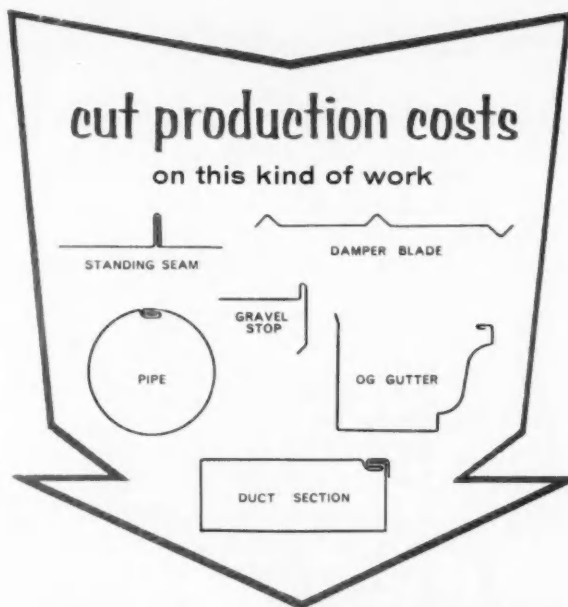
BULLETIN 82 describes and illustrates methods of using flexible ducts to control industrial dust at points of origination. Included is selection and pricing information—*The Flexaust Co., Div. of Callahan Zinc-Lead Co., Inc., Dept. AA, 100 Park Ave., New York.*

Steel Inventory Costs

"WHAT'S YOUR REAL COST of Possession for Steel?" is designed to help determine inventory costs on steel items purchased for extended future use. The booklet breaks down the cost of possession into three major groups: 1) cost of capital (including the capital invested in raw material inventories as well as the capital invested in space to house inventories and the equipment necessary to store, handle, and semi-process steel); 2) cost of operating the space in which the inventory is housed; and 3) cost of such items as obsolescence, taxes, insurance, and accounting—*American Steel Warehouse Association, Inc., Dept. AA, 540 Terminal Tower, Cleveland 13.*

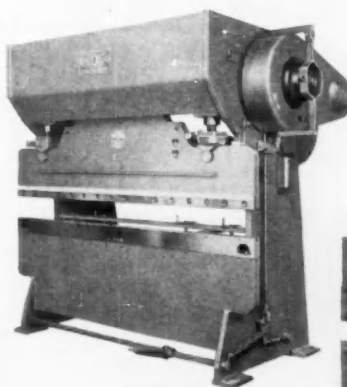
Portable Heaters for Construction Jobs

CATALOG 259A presents data on portable gas heaters for providing heat during construction work. Also included is information on hose and accessories, cylinders and cylinder wrenches—*Insto-Gas Corp., Dept. AA, 998 E. Woodbridge Ave., Detroit 7.*

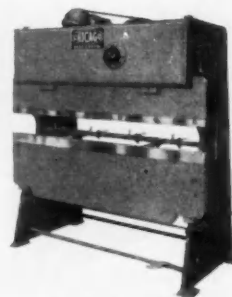


CHICAGO® PRESS BRAKES

with the plus features
for
SHEET-METAL WORK



Models A, B, C, L
30, 36, 50 and 60 Ton Capacities



Models 131 and 265
11 and 25 Ton Capacities

Complete literature, or recommendation on any job upon request
Distributors in all principal cities



Press Brakes • Straight-Side-Type Presses • Press Brake Dies
Hand and Power Bending Brakes • Special Metal-Forming Machines

DREIS & KRUMP

MANUFACTURING CO.

7404 South Loomis Boulevard, Chicago 36, Illinois

Stainless Steel Sheet and Strip

FULL COLOR BROCHURE illustrates facilities for producing stainless steel sheet and strip. Included are interior and exterior views of a Sendzimir mill as well as photographs of coil preparation line, hot anneal furnace, and slitters for cutting coil into strip and specified sheet lengths—*Jones & Laughlin Steel Corp., Stainless and Strip Div., Dept. AA, Box 4606, Detroit 34.*

Test Equipment

BULLETIN 2060 contains data on instruments for testing air conditioning and heating equipment. Test equipment described includes millivoltmeters for checking safety thermocouples on gas-fired furnaces and hot water heaters; volt-wattmeters for simultaneous readings of volts and watts; ac and dc ammeters; ac and dc milliammeters; and dc microammeters—*Simpson Electric Co., Dept. AA, 5200 W. Kinzie, Chicago 44.*

Ventilating Fans, Range Hoods

VENTILATING FANS and range hoods are described in bulletin 237-L (eight pages). Designed to be used in

sales presentations, the booklet is illustrated throughout with product and application photographs. Also included are specifications and dimensional information—*Leigh Building Products., Div. of Air Control Products, Inc., Dept. AA, Coopersville, Mich.*

Skylights

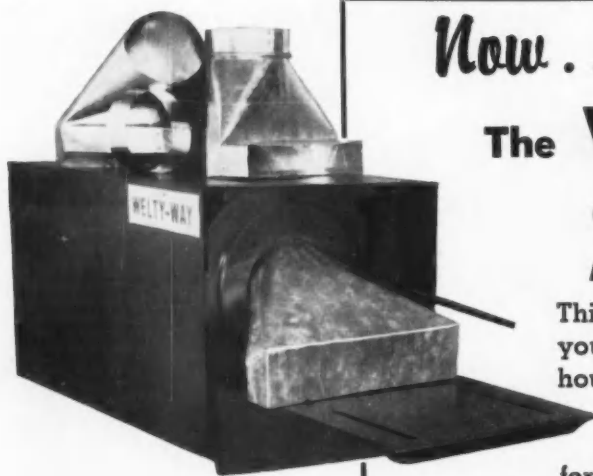
ANNUAL CATALOG contains information on "Marcolite" aluminum and glass fiber skylight products. Specifications, design data and installation photographs are included—*The Marco Co., Dept. AA, 45 Greenwood Ave., East Orange, N. J.*

V-Belt Drives

TWELVE PAGE ILLUSTRATED MANUAL entitled "How to Get Longer Life from V-Belt Drives" tells how to select and install V-belts, how to detect V-belt trouble, diagnose belt failures, and correct drive troubles. A list of maintenance tips is included as well as a suggested inventory survey check-list—*B. F. Goodrich Industrial Products Co., Dept. AA, 500 S. Main St., Akron, O.*

Coatings for Metal, Plastic Surfaces

THIRTY-SIX PAGE BROCHURE gives data on clear and colored coatings for use on metal, plastics and other



*... send for more
information and
literature today!*

Now... Featuring The WELTY-WAY Collar Attaching Machine newest time-saving device available

This handy machine will enable you to cut your working time almost in half. In only one hour the new WELTY-WAY Collar Attaching Machine will attach from 200 to 300 collars to boots and fittings of various forms ranging from 4" to 7" collars. It takes approximately just 10 minutes to change dies from one size collar to another. This machine is powered with a $\frac{3}{4}$ HP single Phase motor and requires 60 lbs. air pressure to operate.

WELTY-WAY PRODUCTS INC. 714 FIRST AVENUE, N.W.
Distributors for WELTY-WAY Collar Attaching and Gutter Machines CEDAR RAPIDS, IOWA

materials. Coatings may be applied by spraying, screening or roller method—*Bee Chemical Co., Dept. AA, 12933 S. Stony Island Ave., Chicago 33.*

Condensing Unit

ILLUSTRATED BULLETIN describes a four ton condensing unit said to give 49,000 Btuh of cooling when remotely connected with or close-coupled to a three ton "Landmark" evaporator and 51,000 Btuh with a five ton evaporator. When unit is installed with acoustical discharge hood, air is ejected high and upward on the same side that it enters. Without the acoustical hood, air is discharged from the top of the unit. Dimensions are: height, 34½ in.; depth, 33 11/16 in.; width, 59½ in.—*Lennox Industries Inc., Dept. AA, 200 S. 12th Ave., Marshalltown, Ia.*

Steel Sheets and Strip

REVISED BULLETIN lists steel sheets and strip available for immediate shipment in the form of coils, stock sizes and cut-to-order sizes. Cost factors are reviewed as a guide to economical purchasing. Characteristics of each type of sheet are listed. Bulletin also contains information on pre-painted steel in slit coils and flat sheets. Ask for bulletin 20-1—*Joseph T. Ryerson & Son, Inc., Dept. AA, Box 8000-A, Chicago 80, Ill.*

Axial Fans

BULLETIN No. 5802 describes axial flow fans featuring compact design, light weight, quiet operation and low maintenance cost. Fans are available in square and round flange as well as clip mounting arrangements, or can be supplied with special mountings to meet customer specifications—*Pesco Products Div., Borg-Warner Corp., Dept. AA, 24700 N. Miles Rd., Bedford, O.*

Building Insulation

"HERE'S HOW FIBERGLAS Paves Your Way to Profits" explains the benefits of full insulation in residential construction and illustrates available merchandising and sales aids—*Owens-Corning Fiberglas Corp., Dept. AA, National Bank Bldg., Toledo 1.*

Stainless Steel Sheet and Strip

BOOKLET describes stainless steel sheets, strip, and plates. Detailed information is given on various types of chromium-nickel and chromium types, also special grades such as precipitation hardening stainless steels and "17-14 Cu-Mo" for high temperature service—*Armco Steel Corp., Dept. AA, 703 Curtis St., Middletown, O.*

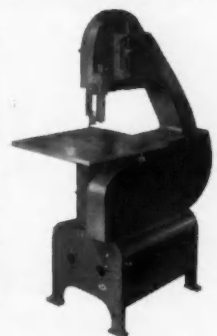


WITH THIS NEW [®]
LOCKFORMER

BETT-MARR
BAND SAW

**DOES THE WORK OF
SIX MEN WITH SNIPS!**

Stacked cutting with the Lockformer Bett-Marr Band Saw will actually produce duct work pieces up to 12 times faster than by hand. Cuts 50 to 70 stacked sheets at speeds up to 15 inches per minute. Adjustable blade speeds, from 100 to 3000 fpm, permits cutting any wood, metal or plastic without blade chatter... even stainless steel up to 12 gauge can be friction cut with no distortion.



2 and 3-WHEEL MODELS
13½ inch and 24 inch throats

**Outperforms Band Saws
Costing 3 Times As Much**

The Lockformer Bett-Marr is the one band saw expressly designed for the sheet metal shop. For as little as \$445.00* you can put this rugged high-production band saw to work on any cutting job in the shop. By cutting labor costs 80-90%, it will quickly pay for itself on the first few jobs.

*13½" throat model. Prices subject to change without notice.

LOCKFORMER
TIME SAVING,
MONEY MAKING
EQUIPMENT

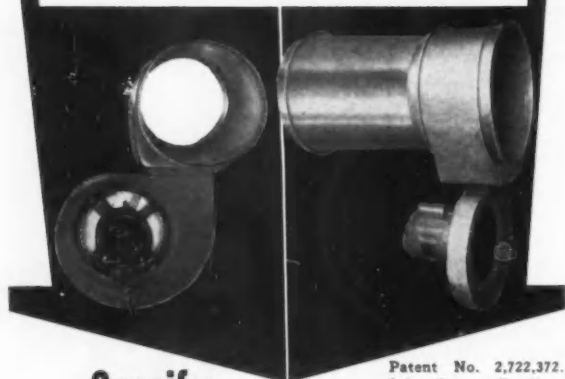
Write for Free Copy of Latest Bulletin

Manufactured by

THE LOCKFORMER CO.
Dept. A, 4615 West Roosevelt Road
Chicago 50, Illinois

In Canada: Brown Boggs Foundry & Machine Co., Ltd., Hamilton, Ontario

**FOR LOW COST HEATING
PLANT POWER-DRAFT AND
INDUSTRIAL EXHAUSTING**



...Specify

Quickdraft

Patent No. 2,722,372.
Other Patents Pending.

- ★ NO MOTORS, FANS OR BEARINGS
- IN EXHAUST LINE ★ NEEDS NO STACKS
- ★ ACID RESISTING FINISHES ★ STATIC
- PRESSURE UP TO 60 INCHES

FOR HEATING PLANTS AND INCINERATORS, Quickdraft provides constant draft for efficient and economical combustion. It eliminates pulsating or chattering, puffing, smoking and sooting. Costly, tall and unsightly stacks are unnecessary.

FOR INDUSTRY, Quickdraft now offers from 1/4-inch to 60-inches static pressure for exhausting corrosive gases, abrasives and paint spray . . . moving fine bulk materials and wastes.

FOR MOVING AIR . . . in or out of building through ducts . . . Quickdraft is outstanding.

IMPORTANT NOTICE

For withstanding corrosive gases, all Quickdraft units are available in standard acid resisting vitreous enamel, No. 316 Stainless Steel, rigid plastics (P.V.C.) and with plastic and Fiberglass coatings.

Write for QUICKDRAFT ENGINEERING
DATA on your application . . . today.

**Quickdraft
CORPORATION**

P. O. Box 87-D
Canton 1, Ohio



we hear that . . .

► **JOHNS-MANVILLE CORP.** recently put its seventh new factory this year into production. The new plant, located in south Chicago, is operated by the Dutch Brand Div. and is one of the projects of a quarter billion dollar growth program started by the company soon after World War II. It increases by more than 50 percent the division's capacity for production of pressure-sensitive tapes, adhesives and related rubber products.

Present at the plant opening celebration were A. R. Fisher, chairman and president of Johns-Manville, and E. F. Boyle, vice president and general manager of the Dutch Brand Div., as well as a number of other company officials, about 100 members of the press and city officials. In his address to the group, Mr. Fisher, pointing out that construction is one of the country's principal economic props, said he believes that in 1959 new construction will pass the \$50 billion mark for the first time in history. "There may be temporary setbacks, of course," he said, "but for the long term we should have a bigger boom than the record breaking period that followed World War II."



C. L. AMMERMAN, R. M. Hadrath and E. A. Ammerman prepare to break ground at site of the Ammerman Co.'s new plant

► **THE AMMERMAN CO.'s** new manufacturing plant at Stillwater, Minn., is nearing completion and is scheduled for early occupancy. More manufacturing space was needed to accommodate stepped-up production schedules, according to C. L. Ammerman, the firm's president. The new plant is a single story building containing 30,000 sq ft of space.

► **GREENHECK FAN & VENTILATOR CORP.**, Schofield, Wis., has been approved for membership in the Air Movement & Conditioners Association.

► **L. K. STRINGHAM**, formerly vice president in charge of engineering for Lincoln Electric Co., has

been named a vice president of Emerson Electric Mfg. Co. Mr. Stringham will head the firm's recently expanded research and development program.



Edgar F. Wendt



William R. Heath

► EDGAR F. WENDT has retired as president of Buffalo Forge Co. after serving in that capacity for 29 years. He will continue with the firm as a director. Succeeding him as president is William R. Heath, who has been with the company for 36 years, during which time he has served as chief engineer, director of manufacturing, vice president, and executive vice president.

► DREIS & KRUMP MFG. Co. recently completed the construction of a new assembly building at its Chicago plant. The new building, measuring 55 × 300 ft, is serviced by a 25 ton overhead crane.

► ACCORDING TO A SURVEY recently completed by General Filters, Inc., nearly 7,000,000 families need furnace humidifiers. The report also covers the need for replacement plates and the profit potentials in the humidifier market.

► HENRY M. HAASE, president of the York Corp., subsidiary of Borg-Warner Corp., recently placed the blame for the relatively slow rate of growth of the air conditioning industry on the industry's failure to properly sell the public on the comfort, convenience and benefits provided by a quality air conditioning system. Speaking at a recent meeting of York distributors, Mr. Haase said that quality, performance and consumer benefits will receive major emphasis in his company's advertising and merchandising programs during the year ahead. He told the distributors that the company's "Blue Chip Franchise" plan for 1959 was designed to help bring more stability to an industry troubled by "price-cutting, short-time seasonal sales efforts and low profits." He said that the Blue Chip Franchise "is based on the conviction that the consumer wants to know that he is getting a quality product for his money."

Discussing new products now in the formative stage, he said: "We have developments on the drawing boards and in test installations that will make air conditioning even more essential to health and comfort than it is today. Although they will not alter the vast potential market for many of our present prod-

The Rabbit Who Had Only One Ear



Once upon a time ...

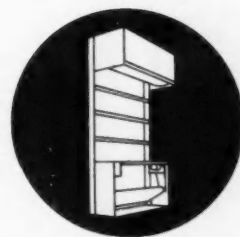
there was a rabbit who had a reputation as a very dumb bunny ... He listened to only one side of the story. He hadn't heard that Automatic Roll-Kleen Air Filters, handling millions of cfm, made by Farr Company were being installed all across the land.

One day his friendly Far-Air man pointed out the Roll-Kleen features. When he saw the 24-carrot quality of this filter, his good ear stood straight up ... (for quality is hard to hear even with two ears).

Now Mr. Bunny's clients multiply, for only maintenance-free Roll-Kleen will he specify.

Moral:

Compare before you specify. Hear all sides of the Automatic Filter Story. Nibble off the coupon below and mail it today.



FARR

COMPANY

NEW YORK

LOS ANGELES

CHICAGO

FARR COMPANY

P.O. BOX 45187 AIRPORT STATION
LOS ANGELES 45, CALIFORNIA

Hop to it and send me the new Roll-Kleen Bulletin B-1400-2A today.

NAME _____

TITLE _____

COMPANY _____

STREET ADDRESS _____

CITY & STATE _____

this **WALKER** SHUR-FLO Unit... Draft Inducer-Regulator

ENDS DRAFT PROBLEMS RIGHT FROM THE START...

MODELS For Gas ... Oil ... and Solid Fuels!



THE INSIDE STORY OF SHUR-FLO EFFICIENCY

- Hi Volume Self-Feathering Fan
- Self-Cleaning Blades (No soot build-up)
- Stainless Steel Shaft, Hub, and Blades
- Quiet, burn-out proof motor
- Silicone oiled bearings
- Extra rigid mountings.
- Extra heavy gauge galv. steel construction.



"I don't fuss and fret with uncertain draft anymore since Walker brought out this low-priced draft inducer-regulator combination. Now, I install Walker inducers on all my jobs. That puts me way out ahead, because with good draft I know every job will be exactly right from the start."

"Most Efficient Draft System Ever Made"

Suy Heating Contractors,
Architects, Home Owners

Draft problems are eliminated with a Walker Shur-Flo Control (Pats. Pending) in an oil, coal, or gas-fired installation because it's the **SUREST DRAFT SYSTEM** ever devised.

Here's an economical draft inducer that's a fool-proof answer to every draft problem from older heating installations to modern, low-roofed houses. You just install it and forget it. What could be better?

Moreover, the Walker Shur-Flo with fan operated draft inducer moves **ONLY** flue gases; does not suck in outside air. Building and home owners like the Shur-Flo because it runs quietly, costs less to operate, and requires little power. You'll like the Shur-Flo because it installs quickly at any angle—vertically, horizontally, or at a pitch—and virtually eliminates costly callbacks and corrections.

There's a Walker Draft Control scientifically designed to meet every draft problem regardless of fuel. 28,000,000 in use prove efficiency. The standard of performance for the industry.



ROYAL PURPLE
for smaller central
heating plants



JUNIOR LINE
central heating
budget control



DOUBLE SWING
for gas fired
equipment



VENTURI CAP
for heating
and ventilating

For full details, see your supplier or write direct

WALKER MFG. AND SALES CORP. 1730 Penn. St., St. Joseph, Mo.

we hear that

(Continued)

ucts, we are perfecting new gas, oil and electric powered heat exchangers that are compact in design as well as highly efficient in operation. Built in between the studs of new homes or adapted to existing buildings, these units will combine with cooling, dehumidifying, and air cleaning systems to give the owner complete control over the indoor climate of his home."



T. B. FOCKE, president of National-U.S. Radiator Corp. (right), presents symbolic bronze key to the new engineering center to L. N. Hunter, senior vice president for engineering and research, as a token of appreciation for his part in planning the new facility

► **NATIONAL-U.S. RADIATOR CORP.** recently dedicated its new 40,000 sq ft engineering center at Johnstown, Pa. T. B. Focke, president, speaking at the dedication ceremonies, said, "This new building gives us the flexibility we need to develop and evaluate new designs in heating and air conditioning equipment, as well as to explore such new and promising fields as heat pumps, solar and electric heating." The dedication followed a civic luncheon given by directors of the corporation at which Dr. Eric A. Walker, president of Pennsylvania State University, was the guest of honor. Other guests included business leaders of the Johnstown area and a number of prominent figures in the heating and air conditioning industry.

► **FOR THE SECOND CONSECUTIVE YEAR**, Armco Steel Corp., has won the advertising award of the National Association of Sheet Metal Distributors. The plaque, signed by Louis F. Demmler, president of the association, was presented to W. A. Danner, manager of eastern sales for Armco, by Lee Haines, chairman of the advertising awards committee.

► **THE VAN-PACKER CO. Div. of The Flintkote Co.**, has moved its offices from Carbon Cliff, Ill., to new facilities at Chicago Heights.

wholesaler doings...



INVITATIONS to wholesaler's open house celebration were sent on a postcard picturing new warehouse and office facilities

► **UNION ROOFING & HEATING SUPPLY CO., INC.**, Altoona, Pa. recently was host to over 200 dealer-contractors from the central Pennsylvania area as well as some 30 manufacturers' representatives. The occasion marked the firm's 58th anniversary and the opening of a new warehouse. Founded by the late Joseph C. McKerihan at 1805 9th Ave., the company has expanded until its buildings now occupy the property from 1801 to 1807. In October of 1953 the business was incorporated with C. O. McKerihan as president and treasurer and Isabel D. McKerihan as vice president and secretary.

► **CHARLES R. BENNETT** has joined the Warren Barr Supply Co., Chicago, as manager of its heating and air conditioning department. He will direct the sales of furnaces, air conditioning units and supplies. Before joining the Warren Barr company, Mr. Bennett was with Armstrong Heating Supply Co., Chicago wholesaler, where he served for many years as vice president and general manager.



Charles R. Bennett

► **DON STARR** has rejoined Ashburn Supply Co., Culver City, Calif., distributor, as sales manager. Mr. Starr has been in the heating and air conditioning industry in the southern California area for the past 10 years. During 1950 and 1951 he was assistant sales manager for the Ashburn firm. He returns to the company after seven years of service with a manufacturer of heating and air conditioning equipment.

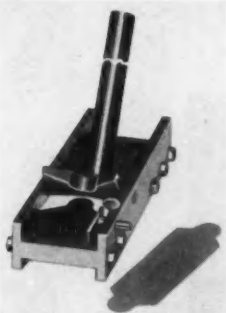
► **UNITED STATES ELECTRIC CO.** has been named to cover the Springfield, Ill., area for Copeland Refrigeration Corp., handling the sale of condensing units, compressors and replacement parts. The new wholesaler maintains offices at 216-220 Adams St., Springfield.



SWIVEL HEAD SQUEEZER TONGS ▲
For closing Government box lock connection on duct work and all standing seams. Swivel head makes tongs usable on all four sides, in either vertical or horizontal position.

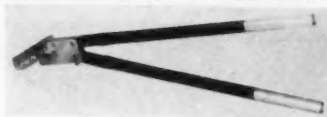
for a complete
line of **HANDY
TOOLS AND
EQUIPMENT**
... see

CLEAT DRIVE NOTCHER ►
Handles up to 3" wide, 22 ga. or lighter. Hand or foot operation. Mounts on bench, or on job with clamps, or bolts and screws.



**CLIP
PUNCH** ►

For fastening slips or seams on ducts. Will push a "half moon" thru 3 thicknesses of 18-ga. steel. No hammering or flattening out to fasten slip to the duct.



**SOLDERING
OUTFIT** ►

Will give you hot soldering iron in one minute—Solders eight hours for 10¢—Right amount of heat—No changing of irons—Make your own fuel from water and carbide.



REINER & CAMPBELL CO., INC. P.O. Box 5035
Newark 5, N.J.

Hard to
SODER —
Metals

Aluminum, Cast Iron
Stainless Steel
Galvanized Metals



FLUXES
SODERING
BRAZING & WELDING

L. B. ALLEN CO. INC. Chicago 31, Ill.

9302 BERENICE, SCHILLER PARK, ILL.



Look Better — Last Longer

Superior workmanship and finish in heavy-gauge metal assures installations of lasting beauty. Most designs stamped in any thickness, up to one-fourth inch, from any metal. Catalog No. 36 illustrates all designs and gives complete working data. Free on request.

Diamond Manufacturing Co.
Box 34 Wyoming, Pa.

Sales Representatives in most principal cities.
Consult your Classified Telephone Directory.

FLANGES THE DUCT *with Amazing Speed!*

Less than 5 seconds on short
and lighter pieces . . .
Slightly longer on bulkier pieces

MAKES PERFECT DRIVE-CLEATS TOO!

The ONLY tool that does both.
A complete drive cleating tool . . .
no set-up time . . . no adjustments.
Handy to take out to the job when
not needed in the shop. Turns idle
time into production time. Flanges
any square duct up to 20 gauge.
Quickly pays for itself in time,
material and labor savings.

No. 12 Smith's Cleat Bender	12" Wide — \$ 49.80*
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appointments . . .

► **JACK SEARLS** as manager of field sales, heating and air conditioning controls, for Controls Co. of America. Mr. Searls was formerly director of sales for Penn Controls, Inc. and has also been associated with White-Rodgers Co., where he served as vice president in charge of sales.

► **CLAUDE WILSON** as a district manager for Lima Register Co. Mr. Wilson will supervise sales activities in a territory comprising Colorado, Utah, Kansas and Nebraska as well as Kansas City and St. Joseph, Mo. Otis N. Fussell has been named a district sales representative to serve a territory including Tennessee, Arkansas, Louisiana, Mississippi and Alabama. Named a manufacturer's sales and warehousing representative in the north Texas and Oklahoma area is J. P. Ashcraft Co., Inc., Dallas, Tex. The Ashcraft firm has branches in Ft. Worth and Lubbock, Tex.; Shreveport, La.; and Oklahoma City in addition to the main office and warehouse in Dallas.



Claude Wilson



Larry Cooper

► **LARRY COOPER**, former president of Buckeye Furnace Pipe and Fittings Co., as sales representative in parts of Ohio and Pennsylvania for the Peerless Corp.

► **JOHN W. BODWELL** AND **ROBERT T. HARVEY** as assistant general managers of sales for Joseph T. Ryerson & Son, Inc. Both men report to Weaver E. Falberg, general manager of sales, and headquarter in the company's general offices in Chicago.

► **EARL SCHWENK JR.** as manager, sheet and strip department for Production Steel Co. of Illinois.

► **WALTER ALLEN** as manager of the newly created architectural and design promotion department of Bowman Steel Corp.

► **JESS L. MOORE JR.**, as general manager of the newly formed home heating and air conditioning marketing division of The Coleman Co. Inc. Mr. Moore joined the firm in 1947 as a district sales representative, and has since served as a regional manager, director of market research, and administrative assistant to the president.

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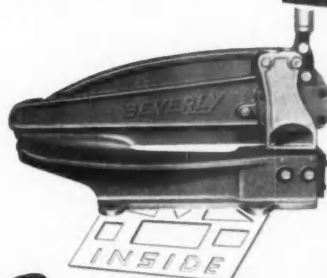
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FEATURES

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appointments

(Continued)



Mel Newman



Roy A. Evans

► MEL NEWMAN as district representative in Louisiana and southern Texas for Milwaukee Electric Tool Corp. Prior to joining the company, Mr. Newman was in the sales department of the Allis-Chalmers Mfg. Co. Roy A. Evans has been named district representative in Alabama, Georgia and Florida.

► R. B. GRANT as manager of the Rocky Mountain region for Minneapolis-Honeywell Regulator Co. Mr. Grant, former manager of the company's Los Angeles branch, succeeds E. A. Thompson, who has been transferred to Los Angeles on a special sales assignment. Mr. Grant's territory comprises Colorado, Utah, Wyoming and parts of New Mexico, Nevada, Idaho, Oregon and Montana. J. T. Pitts has been named southwest regional sales manager and will be responsible for sales and service activities in Texas, Oklahoma, Kansas, Louisiana and parts of New Mexico, Missouri, Arkansas and Mississippi. Mr. Pitts has been Houston branch manager since 1952. Succeeding him in Houston is C. D. Adams, former commercial sales manager at the Houston branch.

► F. A. TOBITT JR. as district sales manager of the Indianapolis district for Armco Steel Corp. Mr. Tobitt's appointment will become effective January 1, at which time Austin N. Edwards, now head of the Indianapolis headquarters, will retire. C. W. Azbell has been appointed district manager of the firm's Columbus office. C. L. Hill was named district manager of the Louisville office.

► HERBERT GIBSON as regional sales representative for the Champion Furnace Pipe Co. in Iowa, Minnesota and the Dakotas. He maintains an office in Hopkins, Minn. Before joining Champion he represented the Standard Furnace Supply Co. in the same territory.

► STANLEY D. JENSEN as a sales engineer for the Denver branch office of American Air Filter Co., Inc. Dale K. Holt has joined the Los Angeles branch as a sales engineer. Joe P. Richardson, formerly with the air filter products department in the firm's home office, has been transferred to the Minneapolis branch office. The R. J. Clark Equipment Co., Inc., Clearwater, Fla.,



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1/4" hole
thru 16
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Length 8 1/2". Weight
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Punches and dies 1/16" to 9/32" by
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and proper clearance
between punch and
die. Punches round
holes 2" in diameter in
1/8" plate. Holes over 2"
round or 1 1/4" square, or
2" oval require front de-
livery bolsters. Advisable
to have a 3/4" shank on
the punch requiring front
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ram with a 3/4" hole.

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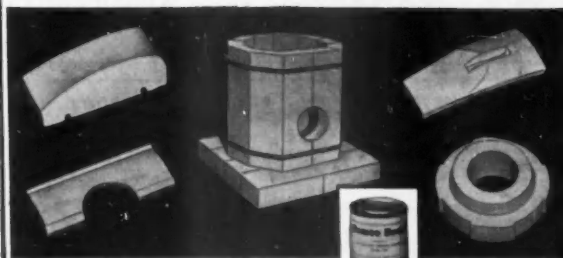


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appointments

(Continued)

will represent the company in the Florida territory, handling the sale of dust control, heating and ventilating equipment. Other new sales personnel are Tom Mulvey, Larry Harlan and Don Ryan, who have joined Air Filter & Equipment Co. of Chicago as sales engineers. Raymond J. Dunn has joined the staff of the firm's Shreveport representative, Richard L. Johnson. Harold Bee, formerly with Kennard Corp., has joined the staff of the Rush Co., Kansas City representative for the company. A new member of the firm's Detroit office is Edward A. Cruse, a sales engineer.

Obituaries

Guy A. Voorhees

GUY A. VOORHEES, one of the outstanding contributors to the advancement of the warm air heating and air conditioning industry, died Friday, November 7, at Methodist Hospital in Indianapolis, Ind. Mr. Voorhees was technical secretary of the National Warm Air Heating and Air Conditioning Association from 1946 to 1958. He was registered in Indiana as a professional engineer and was a member of the American Society of Heating and Air-Conditioning Engineers,

the American Society of Mechanical Engineers, the National Society of Professional Engineers, and the National Federation of Sales Executives. He also held an honorary degree in mechanical engineering from Michigan State College.

Mr. Voorhees was the originator and guiding force of the Indoor Comfort conferences, which over the years have been attended by more than 20,000 heating and air conditioning dealer-contractors. He was instrumental in summarizing, interpreting, organizing and writing the technical manuals of the National Warm Air Heating and Air Conditioning Association.

His widow, Mrs. Okel Bly Voorhees, is the only survivor.

Robert M. Nelson

ROBERT W. NELSON, 48, vice president of American Air Filter Co., died suddenly October 9 while at work. Mr. Nelson was a former president of the Air Moving and Conditioning Association and a member of the American Society of Heating and Air-Conditioning Engineers. He joined the Herman Nelson Corp. in 1939 and was the firm's vice president when it merged in 1950 with American Air Filter. He was executive assistant to the director of sales for American Air Filter until 1956 when he became director of the company's central administrative staff.

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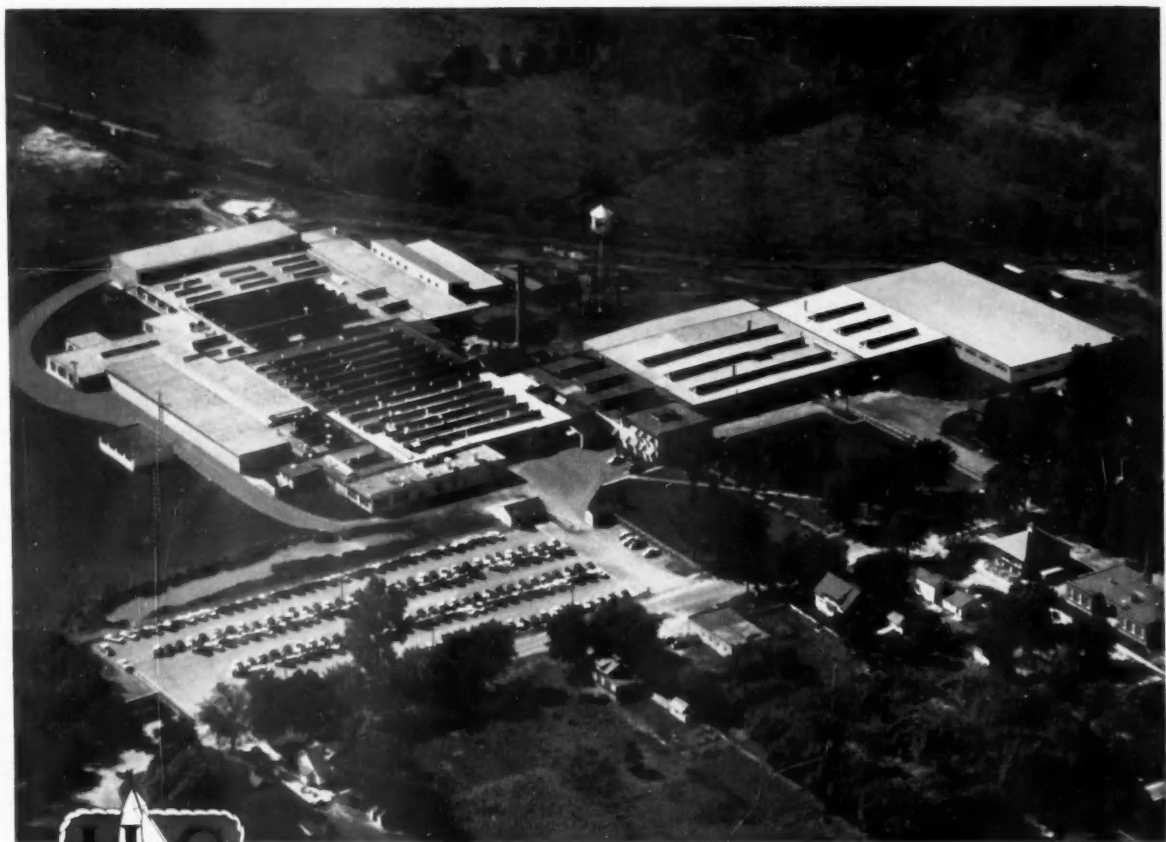


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INDEX TO ADVERTISERS

A A & A Register Co., The 12 A-J Mfg. Co. 17 Advance Furnace Co. Aerofin Corp. Air Conditioning Div. of American Standard Air Control Products Inc. 75, 82 Air Devices Inc. 17 Airtemp Div., Chrysler Corp. 23 Ajax Furnace Fitting Co. Div. Cincinnati Sheet Metal & Roofing Co. Allen Co., Inc., L. B. 101 Aluminum Co. of America American Air Filter Co., Inc. American Metal Products Co., Inc. Anchor Div., Stratton & Terstege Co. Anemostat Corp. of America Arkton Mfg. Co. Armco Steel Corp. Armstrong Fittings Co. Armstrong Furnace Co. Armo Adhesive Tapes, Inc. Auer Register Co., The 18, 19 Auto Flo Corp. 80 Automatic Humidifier Co. 103	F Fairway div., Auto-Flo Corp. 80 Fallsington Mfg. Co. Fan-Air Company Farr Co. 99 Fayette Mfg. Co. Fedders-Quigan Corp. Felter Co., John Field Control Div. of H. D. Conkey & Co., Inc., Inside Front Cover Firewel Co., Inc., The Flagler Corp., The Follansbee Steel Corp. Fraser-Johnston Co. 87 "Freon" Products Div., du Pont de Nemours & Co., Inc. E. I. Frigidaire Div., General Motors Corp.	M Little Giant Pump Co. 9 Lockformer Co., The 9, 97 Lockhart Mfg. Corp. Maid-O'-Mist, Inc. 6 Malco Products Majestic Co., The Manning-Bowman Div. McGraw-Edison Mastercraft Supply Co., Inc. McQuay, Inc. McQuay-Norris Mfg. Co. 3 Meyer & Bro. Co., F. Meyer & Son, Inc., Wm. W. Meyer Furnace Co. Mid-Continent Metal Products Co. 106 Miller & Doing Miller Electric Mfg. Co., Inc. Milwaukee Electric Tool Corporation Minneapolis-Honeywell Regulator Co. 14, 15 Modern Lighters Inc. 8 Moncrief Furnace Co. 103 Mongomery Specialty Co. Morey, Dan 107 Morrison Products, Inc. Morrison Steel Products, Inc. Mueller Climatrol Division of Worthington Corp. 5	Schaefer Brush Mfg. Co. 105 Seick & Co., Walter E. 94 Skuttie Mfg. Co. Smith, R. E. 102 Sonoco Products Co. 86 Southern Screw Co. Southwest Mfg. Co. 30 Standard Power Groove Machine Corp. Standard Stamping & Perforating Co. Steinen Mfg. Co., William 85 Stewart-Warner Corp., U. S. Machine Div. Stic-Klip Mfg. Co., Inc. Stoddard Industries, Inc. Sundstrand Hydraulic Division Surface Combustion Corp. 27, 28
B Bacharach Industrial Instrument Co. Banner Burner Co. Barber-Colman Co. Barber Mfg. Co. Bar-Brook Mfg. Co., Inc. Bart Machine Specialties Berger Bros. Co. Bethlehem Steel Co. Beverly Shear Mfg. Co. 103 Bostitch, Inc. Boston Machine Works Co. Buffalo Forge Co. Burnham Corp.	G Galvan Mfg. Co. Gem Clay Forming Co. 105 General Controls Company General Electric Company General Filters, Inc. General Gas Light Co. Gerrett Corp., M. A. Goodyear Tire & Rubber Co., Inc. Grayson Controls Div., Robertshaw Fulton Controls Co. 83 Great Western Steel Co. Greenheck Fan & Ventilator Corp. Gustin-Bacon Mfg. Co.	N National Lock Company National Metal Fabricators 91 National Modulation Co. 107 National Thermatic Corp., Div. Felter Co., John National-U. S. Radiator Corp. 79 Nelson, Herman Div. of American Air Filter Co., Inc. Niagara Machine & Tool Works Norman Products Company Norwood Products Co., div. of A. R. Wood Mfg. Co. Nu-Way Corp.	T Tecumseh Products Co. 69 Temco, Inc. Thermac Company Thermo-Base Div., Gerwin Industries Inc. 68 Thor Metal Products Co., Inc. Thor Tool & Die Co. Titus Mfg. Corp. 29 Tordisheet Division, Cleveland Steel Products Corp. Trane Co., The Triangle Engrg. Co., div. of Felter Co., John Tuck-Air Furnace Co. Tuttle & Bailey, Div. of Allied Thermal Corp. Typhoon Air Conditioning Co.
C Cain Mfg. Co. 82 Cam-Stat Inc. Carey Electronic Engineering Co. Metal Wool Div. Carrier Corp. Central-West Machinery Co. 107 Century Electric Co. 61 Century Eng. Corp. Outside Back Cover Champion Furnace Pipe Co. Chase Brass & Copper Co., Inc. 7 Cheney Flashing Co. Chevrolet Motor Div., General Motors Corp. Cincinnati Elbow Co., The 93 Clairage Fan Co. 107 Cleveland Humidifier Co. Colt Ventilation of America, Inc. 104 Columbia Burner Co., The Condensation Engrg. Corp. Controls Co. of America, A-P Controls Div. 78 Crane Co. Crescent Tool Co. 62	H Hall-Neal Furnace Co. 25 Hart & Cooley Mfg. Co. Inside Back Cover Harrington & King Perforating Co., The 90 Heil-Quaker Corp. Henry Furnace Co., The 77 Herbert Fuel Devices Herdall Co., A. M. Hussey & Co., C. G.	O Olsen Mfg. Co., C. A., The 13 Overhead Heaters, Inc. Parker-Kalon Div., General American Transportation Corp. 22 Peck Stow & Wilcox Co., The Peerless Corp., The Penn Controls, Inc. Perfection Industries, Div. of Hupp Corp. Premier Corp. Pringle & Son, R. A. Pullman Vacuum Cleaner Corp. Puroator Products Inc. Pyle-National Co.	U Union Sheet Metal Supply, Inc. 106 United Elec. Co., Mag/c Aire Div. 106 United States Register Co. 84 United Sheet Metal Co., The U. S. Steel Corp. 71 U. S. Steel Supply Div., United States Steel Corp.
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F Lake Chemical Co. Lau Blower Co. Levow, David Lennox Industries, Inc. Leslie Welding Co., Inc. Lima Register Company 31 Lincoln Air Control Products Inc.	L Lake Chemical Co. Lau Blower Co. Levow, David Lennox Industries, Inc. Leslie Welding Co., Inc. Lima Register Company 31 Lincoln Air Control Products Inc.	S St. Clair Rubber Co.	X XXth Century Heating & Ventilating Co. 10
G Lake Chemical Co. Lau Blower Co. Levow, David Lennox Industries, Inc. Leslie Welding Co., Inc. Lima Register Company 31 Lincoln Air Control Products Inc.	L Lake Chemical Co. Lau Blower Co. Levow, David Lennox Industries, Inc. Leslie Welding Co., Inc. Lima Register Company 31 Lincoln Air Control Products Inc.	S St. Clair Rubber Co.	Z Zatko Metal Products Co. 102, 104

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